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THE
NATURALIST:

A
MONTHLY JOURNAL OF

Natural History for the North of England

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
THE UNIVERSITY, LEEDS

with the assistance as referees in special departments of

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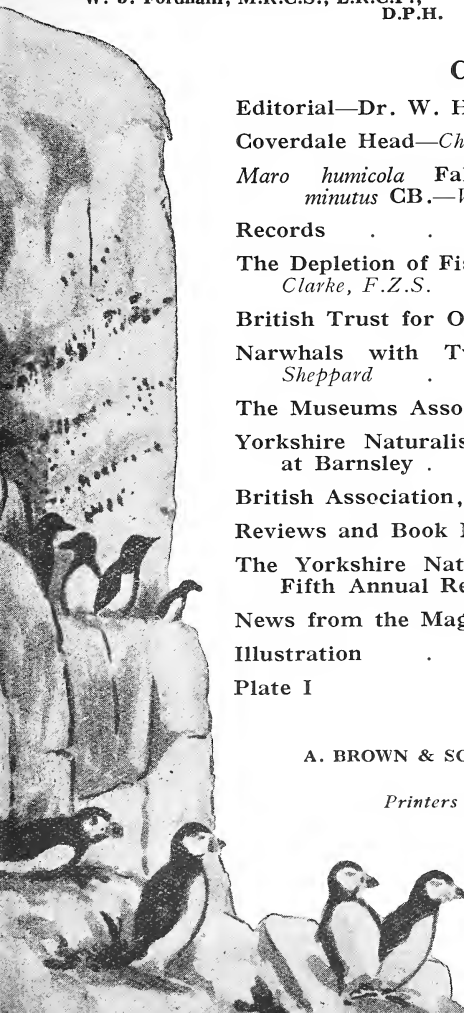
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DR. W. H. PEARSALL

President of the Yorkshire Naturalists' Union, 1937

THE NATURALIST

FOR 1937

EDITORIAL

DR. W. H. PEARSALL

President of the Yorkshire Naturalists' Union, 1937

DR. W. H. PEARSALL, who has been elected as the President of the Yorkshire Naturalists' Union for this year, is the son of Mr. W. Harrison Pearsall, who was known to many members of the Union, to whom his vivid personality and keen interest in all aspects of natural history would make special appeal. He was happily engaged in his studies of systematic botany until within a few days of his death in the summer of 1936 and it will be a matter of universal regret that he will not be with us in 1937 when he would have found so much pleasure in hearing his son deliver two important Presidential addresses, for in January Dr. Pearsall gives his address to the British Ecological Society upon 'The Soil Complex in relation to the Plant,' and in December we shall await with interest his address at our annual meeting. Mr. Pearsall, Senior, was Secretary of the Botanical Exchange Club, in which capacity he succeeded Dr. G. C. Druce and was also the joint author of papers with Dr. Pearsall.

Dr. Pearsall was educated at Ulverston Grammar School and Manchester University, where he continued his studies after taking his B.Sc. degree as a Graduate Scholar. In 1921 he was awarded the D.Sc. degree for his work on the Aquatic Vegetation of the English Lakes. During the war he served with a battery of the Royal Garrison Artillery and later with the Royal Engineers. He joined the staff of the Botany Department at Leeds University in 1919 and was appointed Reader in 1922.

Dr. Pearsall has taken an active part in various scientific societies; for the Society of Experimental Biologists he acted as Secretary from 1928 to 1933 and he is the President of the British Ecological Society for the current year. For the Yorkshire Naturalists' Union he rendered valuable service as Joint Secretary with Mr. Mason from 1919 to 1929, and has been co-editor of *The Naturalist* since 1933.

In 1931 Dr. Pearsall was appointed Honorary Director of the Freshwater Biological Station at Wray Castle, Windermere, where he has taken an active part in organising most successful short courses in freshwater biology for senior University students, and his advice has also been of great

value to a series of investigators, who have studied problems of freshwater biology at this centre.

The scientific publications which have appeared under Dr. Pearsall's name are too numerous to cite in detail, but these have dealt mainly with the vegetation of the English Lakes and with various aspects of plant growth, with especial reference to protein synthesis. In recognition of his research he has been awarded a Leverhulme Grant for two years to continue his studies on the growth of algae.

Dr. Pearsall has a wife and two sons. Mrs. Pearsall is also a botanist and has lectured at the Universities of both Birmingham and Leeds.

COVERDALE HEAD

CHRIS. A. CHEETHAM

It was the intention of our Union to hold a meeting in the upper portion of Coverdale during 1936, but transport difficulties made it impossible and the meeting was held at Hawes. I had the opportunity of spending a short time at the head of Coverdale on September 22nd, mostly in East Stone Ghyll. Flowers were few, the most interesting being the Grass of Parnassus, but earlier the mossy Saxifrage must have been a fine sight, judging by the amount of foliage seen. Golden Rod had been plentiful, and some Hawkweeds. Peat creeping on to the limestone cliffs was responsible for masses of Bilberry hanging over and possibly for the grit-loving *Galium saxatile* L. at the foot of the limestone, where *Galium sylvestre* Poll. grew in the crevices.

At about 1,600 ft. O.D. the limestone is cut into a small gorge, and the falling water quickly polishes the sides and also newly-fallen blocks; on the cliffs around here the grass, *Poa nemoralis* L., is plentiful, and rosettes of *Draba incana* L., the twisted-podded whitlow grass, are to be found with a solitary bush of Juniper.

A single dragon fly, *Æschna juncea* L., was seen, and on the wet rocks the Dolichopod fly, *Liancalus virens* Scop., but the most interesting insects were *Tipula stægeri* Niels., a daddy long-legs associated with woodland, though here plentiful on open moorland, where I only saw a single specimen of *Tipula marmorata* Mg., the species I expected to find in plenty. Another interesting fly was the Limnobiid, *Dicranomyia didyma* Mg. Mosses were plentiful, the more uncommon being *Seligeria tristica* B. and S., which was plentiful lower down where East Stone Beck has joined the main stream. In another ghyll, a little further down the valley,

where some planting has been attempted the soil is more shaley, and here *Discelium nudum* Brid. made a striking show, while on the base of one of the conifers *Orthodontium gracile* Schwæg. was found. Other mosses included *Fissidens decipiens* De Not., *Webera albicans* Schp., *W. carnea* Schp., *Weisia verticillata* Brid., *Mnium orthorrhynchum* B. and S., *Orthothecium intricatum* B. & S., and *Polytrichum urnigerum* L. As there are several other ghylls to be worked it seemed evident that Coverdale ought to be investigated at some future time.

MARO HUMICOLA FALCR.—A SYNONYM OF *M. MINUTUS* CB.

W. FALCONER, F.R.E.S.

IN *The Naturalist* for September, 1919, pp. 295, 300-2, I described and figured a female spider as new to science under the name of *Maro humicola*, pointing out the unusual position of its epigyne, and, in the absence of a distinctive male, the possibility of its being merely a form of *M. minutus* Cb. This conjecture has now been found to be correct. In 1929, a female spider was taken by Dr. Rabeler at Goldenitzer Hochmoor, in Mecklenburg, Germany, in company with one of *M. falconerii* Jacks. It was described by Schenkel as a new species under the name *Gongylidiellum minutissimum* in a paper, 'Beitrag zur Spinnenkinde,' published in *Zoologischer anzieger*, in that year. Later it was discovered to be identical with the British *M. minutus* Cb., Dr. Rabeler making the necessary correction of the designation in his work, *Die Fauna des Goldenitzer Hochmoores, in Mecklenberg* in 1931. Recently through the kind offices of Dr. A. R. Jackson I have had an opportunity of examining this specimen. In it the epigyne is also raised but not to the same height as in *humicola*, thus affording an intermediate view of that organ. Comparison in this respect with others of both forms in my possession and other circumstances in connection with them, the lack of a corresponding male after long search, and occurrence in the same places as *M. minutus* definitely show that *M. humicola* is only a sexually excited female of the last named, so that my species must now be regarded as a synonym only, and be deleted from the county list. Except the German example and another from Hardcastle Crags, *M. minutus* Cb. has occurred only in the Colne Valley, South-west Yorkshire, Ainley Place Wood (with *M. falconerii*), Barrett Clough and Scout Wood, Slaithwaite, and Drop

Clough, Marsden ; and so remains one of the rarest British spiders.

It is probable that the same condition may arise in other species but passes without comment, for in July last, I received an Oxfordshire *Araneus cucurbitinus* Clerck, in which the scape was elevated, giving an unobstructed view of the genitalia which it normally covers and conceals.

RECORDS

OSMYLUS FULVICEPHALUS SCOP. NEAR SHEFFIELD

LAST season (1935) I was able to record the finding of the large-spotted Lacewing-fly (*Osmylus fulvicephalus* Scop.) for the first time flying near a small stream in the Ecclesall Woods, Sheffield (*E.M.M.*, 1935, p. 226). This season, on March 18th, I obtained larvæ from under stones lying on the wet soil by the stream side, and on June 8th again saw the flies in some numbers by the same stream. In addition, on June 1st, adults were disturbed from bushes by the Limb Brook, which forms the Derbyshire boundary of the same woods, but a mile and a quarter from the first locality. The larval stages are evidently passed in more than one stream in the vicinity. This insect has been recorded from only two other localities in Yorkshire and three in Derbyshire.—JAMES M. BROWN, Sheffield.

NOTES ON THE LATE AUTUMN BIRD LIFE ON LAKE SEMMERWATER
ON October 29th, 1936, I spent an afternoon around Lake Semmerwater making observations on the late autumn bird life, particularly respecting water and wading birds.

The day succeeded a week of heavy gales. At one time the water had been about ten feet above its normal level, and on the day of observation was so high as to make a close examination of the reed and willow beds impossible.

Numbers of Moorhens were seen and heard among the willow beds on the northern shore, while a considerable distance out were two Common Scoters. In the north-west bay were about half a dozen Teal. When negotiating the marshy ground to the west I set up one Great Snipe and seven Common Snipe. In the south-west bay was a flight of Mallard, and feeding along the south shore were twenty Curlews. At the point of the long narrow promontory jutting in from the west, were three Whooper Swans ; these were visitors, since no swans are resident on the lake. Near the south-east corner four Tufted Ducks were feeding close to the shore. On rounding the eastern side of the lake, by the Carlow Stone, I was amazed to see two Swallows flying low over the lake ; it will be interesting to note if these remain, and I have arranged for observations to be made.—J. P. UTLEY.

THE DEPLETION OF FISH IN THE NORTH SEA

W. J. CLARKE, F.Z.S.

IN 1914 the writer was in conversation with a prominent member of the North Eastern Sea Fisheries Committee who then expressed the opinion that nothing that man could do could possibly reduce the numbers of fish in the North Sea. Nine years later the then Chairman of the Committee said that there was no possibility of a shortage of fish there as they are so prolific that the idea of fishing out the North Sea was ridiculous. These opinions were offered in response to fears expressed that the improved method of trawling with the otter trawl was so destructive to immature fish and fish food that the result was, in a few years, bound to be a scarcity of food fishes.

Now, in 1936, the Chief Officer of the same department has just stated in his last quarterly report to the Committee that, in his opinion, 'The North Sea seems to be depleted of fish,' and 'it appears to me that the North Sea has been overfished, and the time has arrived when some measures will have to be taken to remedy the position.'

Everyone who takes any interest in our commercial sea fisheries has, for some years past, felt concerned at the annual diminution of the number of fish landed by our fishing boats from the North Sea waters. Year after year less fish is caught until at the present time fishermen are leaving the sea because they cannot make a living, and trawlers are being scrapped because the money they earn is not sufficient to permit of repairs.

There is no doubt that the chief cause of this increasing scarcity is due to the terribly destructive modern trawl net which catches, and kills, everything that comes before it, even down to such small creatures as shrimps and prawns. No small fish can escape from it for the reason that, although the meshes in the fore part of the net are as large as five inches and only half an inch less lower down, diminishing to a one-and-a-half-inch mesh in the extreme end of the net, the strain on these meshes is from corner to corner, thus causing them to close up into an impenetrable bag through which not even sand can get. There is no need, as suggested, for a larger mesh if the strain is so taken that the net fishes with a square open mesh. Such a net has been made but the trade refused to adopt it.

The result of using such a net is that enormous quantities of immature fish are caught. Three tons out of every four brought on board are too small to be marketable, and are thrown overboard again, dead and crushed by the weight of the larger fish. Legislation has been passed to prohibit the

landing of certain fish below a minimum size. This is quite useless because the fish are already dead when brought up; there is a market for this small stuff and to prohibit bringing it ashore is only causing the wastage of much good and cheap food with no resulting benefit.

Another great cause of the diminution of the numbers of cod in particular is the congregation of the fishing boats on the spawning grounds in the early months of the year, catching the breeding fish especially for the sake of the roes.

Inshore trawling is regularly practised, illegally by the steam trawlers, and legally by the smaller motor and sailing craft. They scrape out all the little bays close inshore where the immature fish congregate during the earlier part of their lives, and cause great destruction, not only to them, but to crabs as well.

And lastly the constant pollution of the sea by oil discharged by the type of vessels which use this fuel has a very serious effect upon the newly-hatched fish emerging from the eggs, which nature has provided shall float near the surface of the water because there more oxygen is present. Cut off by the film of oil from this life-giving gas the young fish die from exactly the same cause as the mosquito larvæ in a pond which has been sprayed with oil to ensure their destruction.

The remedies must be international, and are urgent and evident. The net must be made to fish with an open mesh. The spawning grounds, which are quite well known and defined, should be declared closed areas during the breeding season. The three mile limit should be strictly enforced for vessels of all kinds, and finally all oil-burning craft should be compelled to carry oil extractors.

Not until these measures are adopted can any improvement in the North Sea fisheries be expected.

BRITISH TRUST FOR ORNITHOLOGY

Local Distribution of Birds

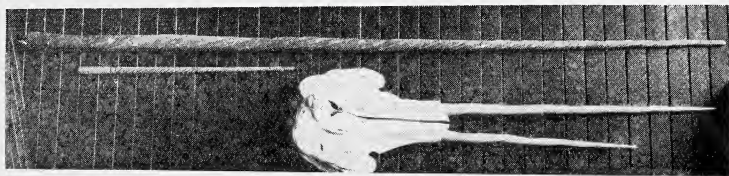
THE Scientific Committee of the British Trust for Ornithology suggests to local ornithological and natural history societies that their members should be asked to study the local distribution of the Red-backed Shrike, Magpie and Coot during 1937. These species are patchily distributed and it is important to record not only where they occur, but also areas where they are definitely not present. In the cases of the Magpie and Coot any differences between distribution during the breeding season and at other seasons are also important. Any information about status in the same areas in previous years would be of value, and, although no census of numbers is proposed, information about degree of frequency is desirable. Reports may be sent to the Editors of *The Naturalist* or direct to Mr. W. B. Alexander, University Museum, Oxford.

NARWHALS WITH TWO TUSKS

T. SHEPPARD

THE ordinary unicorn, which in heraldry shows a horn protruding from the forehead of a horse-like animal really originates from the tooth of a species of whale known as a narwhal. These were treasured by early navigators, and a particularly fine specimen, elaborately engraved and decorated, has just been given to the British Museum by H.M. The King. This 'horn' is really a tooth of the whale, which protrudes horizontally, and makes a formidable weapon. In the old days, a whaling ship would occasionally reach Hull with one or more of these tusks sticking in the wooden hull, having been 'charged at' by the animal.

Recently, from some relatives of an old Hull whaling family, a skull has been obtained, which shows the two teeth,



which originally were the normal equipment of the animal. As time has gone on, however, the second tooth has gradually disappeared, thus allowing the single tooth to become longer and stronger.

In the Museum of Fisheries and Shipping, at Hull, are several of these narwhal tusks of various sizes. In one case a pair has been used as half the equipment of a four-poster bedstead. In another instance a large example has been made into a hat-and-coat stand, for use in the entrance to a house. Elaborately-carved walking sticks are among others, and one skeleton at the Pickering Museum shows a fully-developed tusk and a small one only a few inches long, the growth of which has been retarded. The longest specimen of tusk at Hull is 8 ft. 6 ins., and was presented by the late W. H. St. Quintin.

Examples with two tusks are exceptionally rare, and I am indebted to Mr. Francis C. Fraser, of the British Museum (Natural History) for the following references to these earlier examples :

1. A bidental specimen, 25 feet long, was found on shore at Frieston, near Boston, Lincolnshire, in 1800—Dewhirst, *Nat. Hist. of Cetacea*, 1834, p. 143.
2. A specimen at Hamburg in the Natural History Museum stated to be from a female. This specimen, seen by Sir Sidney Harmer

- in 1912, was stated to be from Greenland, 1684. It is mentioned in Dewhirst, *loc. cit.* p. 140.
3. U.S. Nat. Mus., 23455.—A female with two tusks.—True, *Bull. U.S. Nat. Mus.*, No. 36, 1889.
 4. In *Meddelelser om Grönland*, 1902, Vol. 21, p. 511. H. Winge mentions four bidental skulls in Copenhagen.
 5. Thomas Southwell in 'The Seals and Whales of the British Seas,' 1881, p. 107, states that in a paper in *The Proceedings of the Zoological Society*, 1871, J. W. Clark enumerates eleven skulls in which both tusks are developed; four at Copenhagen, and one each in the Museums of Hamburg, Christiania, Amsterdam, Weimar, Hull, Paris, and Cambridge. Those in Copenhagen and Hamburg are presumably the specimens cited above. To these Southwell says must be added a twelfth, now in the Dundee Museum. There are in the Natural History Museum, South Kensington, three specimens, the one figured in the 'Guide to the Whales,' published in 1909, another purchased in 1917 for ten guineas, and the third presented by a nephew of Frank Buckland in 1934. Frank Buckland's specimen was given to him by Captain Gray, of Peterhead.

To the above must now be added the second example received at Hull recently.

In the *Guide to the Whales* already referred to, we learn: 'From all other Cetaceans the Narwhal (*Monodon monoceros*), of the Arctic Seas, is distinguished by the peculiar character of the dentition, which is striking contrast to that of its cousin, the White Whale. Apart from some rudimentary teeth, the entire adult dentition is reduced to a single pair of upper tusks. In the female these remain permanently concealed in the bone of the jaw; and usually the right tooth of the male exhibits the same condition, while the left one alone is developed into a long spirally-twisted tusk. Very rarely, as in one of the specimens exhibited, both tusks may be developed. In the general contour of the head and body the narwhal is very like the Beluga, but the skin is marked and spotted with various shades of grey. Narwhal feed on cephalopods, crustaceans and fishes. The specimens exhibited include the skeleton of a male, and the skull of a second specimen, in which both tusks are developed; the latter was purchased in 1885. Upon the skeleton has been built a half-model of the animal; and an immature stuffed specimen is likewise shown. In the double-tusked skull it will be noticed that the spiral in both tusks is twisted in the same direction; this forms a remarkable contrast to spiral-horned animals, in which one horn always forms a right-handed and the other a left-handed spiral. Some fine specimens of narwhal-tusks are exhibited on the north wall of the building.'

In 1912 the British Museum issued a circular which contains 'A Key for the Determination of British Whales and Dolphins.' From this we learn that 'The Narwhal, of which only five British examples have been recorded between the

year 1648 and the present day (the most southern being one taken off Boston in 1800), is an Arctic species characterised by its short and rounded head, absence of back-fin, grey skin mottled with darker rings, and the lack of all teeth except a long spirally-twisted tusk in the left side of the upper jaw of the male, or, very occasionally, a pair of such tusks. Every British specimen should be recorded, and at least its skull preserved.'

The accompanying photograph shows the skull with two tusks ; also the largest tusk in the collection, and, below, an ordinary walking stick made from a narwhal tusk, which is elaborately carved with a rope-work design. All these specimens are in the Museum of Fisheries and Shipping at Hull.

THE MUSEUMS ASSOCIATION

At a recent Conference of the Museums Association at Leeds, a discussion took place on the future policy of the Association and its relation to the Museum Federations now being formed ; the Association's Diploma ; the status of the Curator ; the Museums Journal ; and kindred subjects.

Mr. S. F. Markham, the Empire Secretary, considered that the Association's membership was quite inadequate in view of the importance of the Museum movement in the country, and opined that much of the present news in the Association's official journal might be omitted, and that more popular and more useful articles should appear in their place.

Dr. W. E. Swinton, the Hon. Editor of the Museums Association, crossed swords with Mr. Markham, and while willing at any time to receive articles prepared for the Journal, did not consider that any great change in the format of the publication would help to increase the membership.

Eventually the question was referred to the General Purposes Committee for consideration and report, a sub-committee of which has met, and its findings fully considered by the General Purposes Committee.

The question was again raised however, when, at a Conference of the North-Western Federation of Museums and Art Galleries at Buxton recently, Mr. Markham 'put the cat among the pigeons' by declaring that one out of each three museums in the country was not functioning properly, but should be closed ; that is to say, 200 out of the 700.

This part of his address was naturally taken up by the London and Provincial press, and in the opinion of many curators was not likely to assist the museum movement generally, especially as Mr. Markham's great experience must be borne in mind. It will be remembered that in 1927/8, with Sir Henry Miers, he surveyed the Museums of the British Isles, and prepared a lengthy report thereon, which was printed by the Carnegie Trustees.

At Leeds, recently, when a Conference of the Museums Federation was held, and the two oldest, the Lancashire and Cheshire (now the 'North-Western'), and the Yorkshire, decided to consider the matter at a further meeting. Towards this end, Mr. S. L. Davison invited the Yorkshire Federation to visit the Lady Lever Art Gallery at Port Sunlight, on Saturday, October 17th. This was remarkably well attended, and in addition, some members of the North-Western Federation, Mr. J. A. Stendall, of Belfast, and a few others were present, including Messrs. Markham and Wignall. The visitors were well entertained, and had

an excellent opportunity of seeing the treasures of the Lady Lever Art Gallery, under the best of conditions.

In the afternoon a meeting was held around what is probably the finest Chippendale Table in existence, in the Tapestry Room ; at which Mr. J. W. Baggaley, of Sheffield, the President of the Yorkshire Federation, was in the Chair. He called upon Mr. Markham to address the meeting, to be followed by Mr. S. D. Cleveland, of the North-Western Federation, and Mr. T. Sheppard, of the Yorkshire Federation ; after which Messrs. Stendall, Wignall and others spoke, and Mr. Markham replied.

Mr. Markham commenced by stating that he had nothing whatever to retract from his remarks at Buxton ; in fact, he was glad to get the opportunity of repeating and emphasising his statements. The Museum Movement in Great Britain could be looked upon as run by (1) The Government ; (2) Municipal and other Corporations ; (3) The Museums Association and Museum Federations ; and (4) The Carnegie Trustees. These he considered held the key position of the Museum undertakings in the country.

He then gave some remarkable statistics, and stated that the cost of the National and Provincial Museum Movement in this country was 1½ million pounds sterling. Of this, one million, representing a tax of 5d. per head on the population, went towards the National Museums in London, Edinburgh, and Cardiff. Thus, although the Museum at Glasgow is entirely paid for by the Glasgow Corporation and its funds, the people at Glasgow are paying an additional tax for the upkeep of the National Museum at Edinburgh ! And from the national taxation the Provincial Museums got little or nothing from the Government funds. True, the National Museums frequently gave advice when asked to do so ; and through the Victoria and Albert Museum, loans and grants-in-aid were given to the smaller museums, but the cost of this was infinitesimal compared with the product of the tax. One way in which the Government might help the Provincial Museums was by the appointment of three or four experts in different departments, who would spend their time in going to the museums up and down the country, giving advice and help in identification and labelling, as no curator could be expected to have a knowledge of all the many matters which came under museum control.

The cost of the remainder of the museums was being borne by the Corporations, or by private societies or individuals.

With regard to the Carnegie Trustees, the needs of the Public Libraries being largely now satisfied, grants of money had been made to assist museums, and the work has been carried out for some years by a Committee consisting of equal representation from the Museums Association, and the Carnegie Trustees. Grants had been made for improving buildings, for cases, equipment, and re-organisation. More recently grants had been made for curators to visit places abroad, etc., to gain experience, and an attempt had been made to encourage various museum centres to help rural areas with the loan of specimens, but so far this scheme had only been actively investigated by Derbyshire, Leicester, and Reading.

Mr. Markham appealed to the Museum Federations to assist the Museums Association and the Carnegie Trustees in this work.

The second part of his address was devoted to an elaboration of the remarks he made at Buxton. He repeated that there were to-day in the country between 200 and 250 slovenly museums, many of which have been useless for half a century, and no one has taken the trouble to clear them out. Such museums each have an income of less than £200 a year, with no curator, usually with a Committee which never meets.

They are open to the public at certain hours on certain days, and the visitor is taken round by an old woman or an old soldier, who has

no knowledge of the objects exhibited. Such museums occur at places in East Anglia and other parts of England. In Scotland, except for those in four or five of the principal cities, all might well be closed down at once; and in Wales, out of the 17 museums, there are 12 which might well be shut up to-morrow!

The Federations might take the question of those thoroughly bad 200 museums in hand, but to do this, both the Museums Association and the Federations must be more powerful than they are.

There are 700 to 800 members of the Museums Association to-day, but in Mr. Markham's opinion there should be at least seven or eight times that number.

Mr. S. D. Cleveland dealt in detail with Mr. Markham's address, but stated that some of the notes he had made would not now be read as Mr. Markham had made a much more comprehensive case than he had done previously.

Mr. T. Sheppard was glad to hear Mr. Markham, as the press reports of the Buxton address certainly gave the opinion that someone had been crying 'stinking fish,' which in these days of economy, and in some cases, lack of interest in museum matters, seemed undesirable. He also referred to the fact that the Museums in the Federations did certainly help each other. He thought that perhaps the Yorkshire and North-Western Federations contained more museums that were out of reach of Mr. Markham's criticism, but he was assured that even Lancashire and Yorkshire contained institutions which Mr. Markham considered would be better closed. He felt, however, that in these cases it was difficult to see how they could be shut up, as the question was 'who would bell the cat?'

Since writing the above, Mr. Markham informs us that of the 65 museums in Yorkshire, over 20 should, in his personal opinion, either be closed down or drastically reorganised. He has sent the full list of these to the President of the Yorkshire Federation for his comments.

T.S.

NEWS FROM THE MAGAZINES

The Irish Naturalists' Journal for November is largely devoted to a series of memoirs with photographs, etc., relating to the late Robert John Welch, the wonderful photographer, conchologist, geologist, and 'all round' naturalist, of Belfast.

The Transactions of the Society for British Entomology contain numerous interesting and important papers namely 'The ancestry of insects,' by A. D. Imms (the theory most in accord with morphological evidence points to Symphylian ancestors. The many structural features common to the Thysanura and Symphyla afford the basis for this conclusion. The Protura and Collembola are side developments. Dr. Imms states that the division of the Insecta into Apterygota and Pterygota is not entirely satisfactory and he proposes an alternative grouping); 'A new species of Corixidae, *Sigara pearcei* (Hemipt.) from Ireland, with descriptions of its closely related species,' by G. A. Walton (taken by Rev. E. J. Pearce in Lough Derg in South Galway) (four plates); 'Oviposition in the British species of *Notonecta* (Hemipt.),' by G. A. Walton (with plate); 'The Ichneumonidea of Wicken Fen: Corrigenda and Addenda,' by G. J. Kerrick; 'Notes on the biology of *Dryops luridus* Erichson (Coleoptera, Dryopidae),' by H. E. Hinton (with figures); 'A contribution towards a study of *Calosoma inquisitor* L. (Coleopt., Carabidae),' by J. H. Cook (six plates); 'The anatomy and histology of the alimentary canal of the adult *Nebria brevicollis* Linn. (Coleopt.),' by M. Carleton (five plates); 'The aquatic coleoptera of North and South Somersetshire,' by F. Balfour-Browne, and 'A provisional list of Cornish insects, Part III,' Diptera (Acalyptratae),' by Rev. A. Thornley.

YORKSHIRE NATURALISTS' UNION ANNUAL MEETING

FOR this meeting the members of the Union were invited to Barnsley by the Barnsley Naturalist and Scientific Society who had the use of the fine premises of the Mining Department of the Technical College by the courtesy of the Barnsley Education Committee. Unfortunately, at the last moment the Mayor of Barnsley, Mr. Alderman Jones, C.B.E., J.P., was prevented from coming to welcome the members as he had intended. At the meeting of the General Committee it was announced that Mr. W. H. Pearsall, D.Sc., F.L.S., had consented to be our President for the coming year, 1937. The excursions for the next season were arranged as follows:

May 15th to 17th	...	...	Upper Swaledale, V.C. 65.
June 5th	...	...	Hutton le Hole, V.C. 62.
June 26th	...	...	Bubwith, V.C. 61.
July 10th	...	...	Blubberhouses, V.C. 64.
July 31st to August 2nd	...	...	Doncaster for Potteric Carr, etc., V.C. 63.

The Chairman of the Wakefield Museum and City Art Gallery Committee and the Secretary of the Wakefield Naturalists' Society invited the Union to hold its next annual meeting at Wakefield and this invitation was accepted gladly. It will be on December 4th, 1937.

The following names were added to the General Committee: Miss M. Gallwey, Miss L. M. Anderson, Miss K. Rob, Messrs. V. S. Crapnell, E. Dearing, A. Thompson, T. H. B. Bedford, A. B. Ward, G. F. Sheard.

Some discussion took place on the question of getting the Annual Report into the members' hands at an earlier date than in the past, thus avoiding the possibility of members seeing reprints in other publications before getting their copies. This will be looked into before the next Report is due. Another discussion dealt with the publication of the additions to his Flora left by the late Dr. Arnold Lees and which were handed to the Union for this purpose. Dr. Sledge pointed out the difficulties that had been met, but stated that a portion of the Flora had been edited and was ready. The Treasurer agreed that the expense of extra pages in *The Naturalist* was now within our means, so those members who have this matter at heart may be assured that something will now be done.

The President, Mr. E. G. Bayford, F.R.E.S., took as his subject 'The Rise and Progress of Coleopterology in Yorkshire.' He has been connected with the Union and with the study of Beetles over fifty years and his address was much enjoyed and we hope to see it in our journal. A hearty vote of thanks was given to him moved by Dr. T. W. Woodhead.

Our thanks to the Barnsley Society and the Barnsley Education Committee were voiced by Prof. A. Gilligan and Mr. W. P. Winter. After this we were entertained with refreshments, shown over the building, saw a display of geological specimens, and collection of miners' lamps, and finally several experimental explosions showed the effect of stone dusting on a coal-dust explosion.

BRITISH ASSOCIATION

THE British Association will hold its 1937 annual meeting at Nottingham from September 1st to September 8th, under the presidency of Sir Edward Poulton.

The sectional presidents are:

Mathematical and Physical Sciences, Dr. G. W. C. Kaye; Chemistry, Dr. F. L. Pyman; Geology, Prof. L. J. Wills; Zoology, Prof. F. A. E. Crew; Geography, Prof. C. B. Fawcett; Economics, Prof. P. Sargent Florence; Engineering, Sir Alexander Gibb; Anthropology, Dr. J. H. Hutton; Physiology, Dr. E. P. Poulton; Psychology, Dr. Mary Collins; Botany, Prof. E. J. Salisbury; Education, Mr. H. G. Wells; and Agriculture, Mr. J. M. Caie.

REVIEWS AND BOOK NOTICES

British Grasshoppers and their Allies, by **Malcolm Burr**, pp. 162, 6 plates, 40 maps, 56 drawings in the text. Philip Allan & Co., 6/- net. Dr. Burr has produced a useful and stimulating little volume. Within the 162 pages he has contrived to deal with all the species likely to be found in this country. Descriptions have been reduced to a minimum, but the tables supplied will allow of their ready determination. Considerable space has been devoted to distribution, and this is illustrated by 40 maps. Nomenclature has been brought up to date, with the inevitable changes in some of the names. The volume is well illustrated by 56 clear line drawings, and 6 plates of photographs, but perhaps line drawings might have been more helpful. Very few uncorrected slips occur in the text, but the omission of an index seems to be a mistake. The book is well printed and bound and of convenient size for the pocket, and should certainly serve to arouse interest in these insects, as the author hopes.—J.M.B.

The Animal World, by **Doris L. Mackinnon**, pp. xvi+272, with many photographic and other illustrations. G. Bell & Sons, 7/6. Not long ago Professor Mackinnon took part in a successful series of broadcast talks, and this very original book may be regarded as a development from these addresses. In thirty-nine chapters the author deals with the structure and life of animals and their inter-relationships with plants. The style is such that quite young children can read the book with interest and profit, and yet there is much food for thought for the teacher and specialist. The numerous illustrations are clear and attractive, and they are entirely appropriate to the text.

Interviewing Animals, by **Dr. Bastian Schmid** (translated by Bernard Miall), with 57 photographs and 5 diagrams, pp. 225. Allen & Unwin, 10/6. Students of animal behaviour are recommended to read this book. Dr. Schmid is well qualified by training and long experience to write on the subject. He lives near Munich, and has worked at a biological institute near Lake Balaton in Hungary. At both places he had ample opportunity for his experiments on the mental equipment of animals and birds, and has produced a volume of absorbing interest. The titles of chapters dealing with the dog will give a very good idea of the line taken: 'How far can a dog see, and at what distance can he recognise his master?' 'The olfactory world of the dog,' 'How does the dog find his way home.' Dr. Miall has produced a very readable translation of a work which will rank high in its class.

Spider Wonders of Australia, by **Keith C. McKeown**, pp. xiv+270, with 34 illustrations. Angus & Robertson, 6/-. Obtainable in London from the Australian Book Co. Readers who have had the good fortune to see Mr. McKeown's book, *Insect Wonders of Australia* will be eager to read this new work from the same pen. This is an entrancing book, and simply crammed with facts put forward in a very readable style, and accompanied by first-class illustrations. All spiders are interesting, and Australian spiders include species with well-nigh incredible life-histories. Mr. McKeown has made good use of his material and even the lay reader will find plenty of thrills in every chapter.

A Bird in the Bush, by **E. Hilton Young** (Lord Kennet), pp. vi+146. Illustrated by **Peter Scott**, with many drawings and a frontispiece in colour. Country Life, 10/6. This is a most fascinating book. Lord Kennet tells us how he began his serious bird-watching, of the mistakes he made to begin with, how they were corrected, and of his subsequent progress. But his book contains far more than this. There are many

finely-written passages about bird-song and bird behaviour, and in addition there are the beautiful illustrations contributed by the author's stepson, Peter Scott.

British Birds, by **Wilfred Willett**, a series of booklets in paper covers each with four colour illustrations by **Roland Green**, and some line illustrations. They have 20 pages each and are published by Messrs. Ward, Lock & Co. for the Ruskin Studio at 6d. each. This is a wonderfully cheap series containing good short accounts of the birds, with Roland Green's fine pictures and some photos and line drawings to help out the text. The following list of the booklets published to date will give an adequate idea of the scope of the series, which is to be continued: No. 1, Thrushes and Blackbirds; No. 2, The Titmice; No. 3, Meadow Birds; No. 4, Hedgerow Birds; No. 5, Water Birds; No. 6, Shore Birds. Further numbers in the series will deal with Birds of the House and Garden, Woodland Birds, Finches, Fly-catching Birds, Marsh Birds, and Small Wading Birds. The coloured illustrations are obtainable separately in postcard form. These are most useful for schools and can be recommended.

The Best of White's Selborne, edited by **F. B. Kirkman**, illustrated by **A. W. Seaby** and others, pp. xiv+144. Nelson, 3/6. Naturalists who do not like having 'selections' of writers dished up for their easy reading must not prejudge this book. It supplies a definite need. Here at last we have Gilbert White's work arranged under subjects and not in the order of the 'letters.' The work is most skilfully done. Take the Nightjar, for instance. This bird has Chapter VI all to itself and the text contains letters xxii and xxxvii to Pennant and extracts from the diaries. There are 34 chapters on these lines. The selections are preceded by a biographical introduction and most useful chronology and bibliography. The form of the book is charming: it is one of Nelson's Argosy Books.

Birds: Collected Leaflets No. 5 of the Ministry of Agriculture and Fisheries, published by H.M.S.O., 1/6 net. The Ministry's Advisory Leaflets are well known and here are 23 of them, all dealing with birds, collected in a neat loose-leaf binder and indexed, at the remarkably low price of 1/6. About 40 birds are dealt with and there is one leaflet on nesting boxes. The writers throughout adopt a guarded attitude when dealing with the economic position of any species. The information supplied is accurate and very few ornithologists will want to quarrel with the conclusions which appear at the end of each leaflet.

Postcards of Geological Subjects. The Geological Museum, South Kensington, London, has recently published an extensive series of real photographic postcards, price 1d. each, which are likely to be of considerable interest to naturalists and to teachers of geology and physical geography. The photographs include reproductions of general views of the Museum, with dioramas and other interesting exhibits; and photographs of British localities of geological importance (many of which are in the north of England), with explanatory text, illustrating marine erosion and sea coasts, rock weathering, vulcanism, and similar subjects. A list is obtainable from the Museum.

The Entomologist's Record for November contains 'Random notes on Argentine collecting. II, An unproductive winter expedition,' by K. J. Hayward; 'Some notes on collecting Lepidoptera in the Bishop's Stortford district in 1936,' by P. B. M. Allan; 'Notes on collecting, etc.,' 'Current notes and short notices,' and supplements: 'The British Noctuae and their varieties,' by H. J. Turner and 'The Butterfly races of Macedonia,' by R. Verity.

THE YORKSHIRE NATURALISTS' UNION'S SEVENTY-FIFTH ANNUAL REPORT

FOR 1936

(Presented at Barnsley on Saturday, 5th December, 1936)

The Seventy-fourth Annual Meeting was held in the University, Sheffield, on Saturday, 7th December, 1935, and the Annual Report presented there was printed in *The Naturalist*, January, February, and March, 1936, pp. 14-24, 36-48, 70-72.

The Presidential Address on 'The Drift Succession in Mid and East Yorkshire' was given by Mr. W. S. Bisat, F.G.S.

The Presidency for 1937 has been offered to and accepted by W. H. Pearsall, D.Sc., F.L.S., as a recognition of his services to this Union as co-Secretary and as Editor of *The Naturalist*, and for his work in Ecological Botany.

Field Meetings have been held in 1936 as follows :—S. West, Drop Clough, Marsden, 25th April; N. West, Hawes, 30th May to 1st June; M. West, Aberford, 20th June; N. East, Hackness, 11th July; S. East, Pocklington for the Wolds, 1st to 3rd August; Fungus Foray, Buckden, 5th to 9th September. The Vertebrate Section met in Leeds on 15th February and 17th October. The Entomological Section and Plant Galls Committee had their field meeting at Aberford, 20th June, and indoor meeting in Leeds, 24th October.

The Excursions for 1937 will be as follows :—

26th June. Bubwith, V.C. 61.

5th June. Hutton le Hole, V.C. 62.

31st July to 2nd August. Doncaster for Potteric Carr, etc., V.C. 63.

10th July. Blubberhouses, V.C. 64.

15th-17th May. Upper Swaledale, V.C. 65.

The following changes of address have been notified since the publication of the list of members with the May issue of *The Naturalist* :—

C. Oldham to Oxfield, Shooters Way, Berkhamstead, Herts.

A. Wood to Thorntonville, Pinfold Lane, Methley.

Ernest Dearing to Devonshire Hall, Headingley, Leeds 6.

E. Wilfred Taylor to 11 The Avenue, Clifton, York.

Membership.—The following new members have been elected during the year, making a total of 305 :—

Mr. P. Burnett, Longmynd, Ruswarp Lane, Whitby.

Miss E. Chamberlain, B.Sc., 149 Stratford Street, Leeds 11.

Miss P. Ebbage, B.Sc., 52 Crossflatts Place, Leeds 11.

Miss F. Ford, B.Sc., Secondary School, Brighouse.

Mr. R. J. Flintoff, F.L.S., F.Z.S., F.C.S., Water Ark Lodge, Goathland, N. Yorks.

Mr. P. S. Kenyon, Weathercote, Ingleton, Yorks.

Mr. J. Rhodes, Dept. Agriculture, The University, Leeds.

Mr. and Mrs. Thurgood, 16 Moss Gardens, Alwoodley, Leeds.

Mr. and Mrs. J. P. Utley, B.Sc., Scafton Grange, Middleham, N. Yorks.

Dr. H. W. Valentine, Middleton Sanatorium, Ilkley.

Mr. D. E. Wood, 6 Claremont Grove Road, Headingley, Leeds.

The following have resigned :—

Miss E. Dufty, 144 Cleveland Street, Doncaster.

Dr. G. A. C. Herklots, B.Sc., F.L.S., The University, Hong Kong.

Mr. A. Middleton, Zoology Department, Oxford.

Mr. E. des Forges, Dial House, Wentworth.

Mrs. E. M. Quayle, Loen, Bewdley.

Miss N. Wilkinson, Hanover Street, Leeds.

Mr. H. Wade, Pitt Street, Barnsley.

Obituary.—During the year we have had a heavy death roll, Miss E. M. Pilkington, a member of our Executive; Mr. F. A. Mason, so lately our President and previously for many years our Secretary; Professor P. F. Kendall, a Past-President and our Senior Vice-President; Mr. W. Bellerby, one of our oldest bryologists; Mr. C. R. Featherstone, Mr. E. Hallowell, and Mr. W. Newbould.

Delegate to the British Association and also to the **Wild Plant Conservation Board of the Council for the Preservation of Rural England**, Mr. Thomas Sheppard, M.Sc.

Wild Plant Conservation Board.—The Union's representative, Mr. T. Sheppard, has kept in touch with the Board's work, but unfortunately was unable to attend the meeting in London through other appointments. The Board is working on the lines indicated by the Union. Dr. A. B. Rendle's address to the Conference of Delegates of Corresponding Societies at the British Association Meeting at Blackpool, on 'The Preservation of Our Native Flora,' was naturally of interest to the Board, which has recently distributed copies of the address among its members.

British Association.—The Union's delegate, Mr. T. Sheppard, attended the Annual Conference of the British Association for the Advancement of Science, at Blackpool, and his report on the Conference appeared in *The Naturalist* for November, pages 260-262.

The Naturalist.—The Editors report a fairly satisfactory year. Some contributions of special merit were received, and the previous high standard has certainly been maintained. It is again necessary to report that much north country Natural History goes unrecorded in our Journal. Some sections of the Y.N.U. are very poorly represented in the year's literature.

BIOLOGY SECTION

Fresh-water Biology Committee (J. M. Brown): Since the last general report the activities of the Committee have continued unabated. At most of the field meetings of the Union, attempts have been made to determine the character of the fauna and flora of the streams in the neighbourhood of the meeting place, and reports regarding these investigations have appeared from time to time in *The Naturalist*. We are thus accumulating a considerable body of observations and facts from which at a later date some generalisations regarding the different types of stream and their inhabitants may be made.

More individually, considerable attention is being given to several streams of different character in the neighbourhood of Sheffield, and an attempt to compare the fauna of a gritstone with that of a limestone stream throughout the year is being made.

The distribution in Yorkshire of the insects which pass their early stages in the water, such as Caddis-flies, May-flies, and Stone-flies, is being worked out gradually, and a fair amount of information is now available.

Papers dealing with various aspects of Fresh-water Biology have been published by different members of the section, such as 'County Records of Crayfish,' by S. H. Smith, in *The Naturalist*; 'Ecological Study of a Chalk Stream,' by H. Whitehead, in *J. Animal Ecology*; 'Effects of Bird Life on Pond Life,' by E. Hardy, in *The Naturalist*; 'Aquatic Vegetation of Malham Tarn,' by W. A. Sledge, in *The Naturalist*; 'From a Microscopist's Notebook,' by Rev. W. L. Schroeder, in *The Naturalist*; 'Additions to the Natural History of Semerdale,' by J. M. Brown, in *The Naturalist*.

The Committee would welcome any formation on any of the points raised, or on other questions related to the subject.

Fresh-water Algæ (A. Malins Smith) : The year has been a good one for these organisms but, of course, new records are unlikely in a county so well worked as Yorkshire. Nevertheless, there is one important new record that of *Oedogonium rupestre* Hin. found in a small pond at Shipley. This alga has previously been recorded for Leicestershire, but not for Yorkshire. The writer has already noted in *The Naturalist* the occurrence of *Coleochaete orbicularis*, and it was later brought to his notice by Mr. Bussey, of Shipley, in similar circumstances to those of the former record for Beale. This second lot was found in Sandal's Pond, Baildon, and appeared abundantly later on the sides of the glass jar in which the material was kept. At Dowley Gap, on 17th June was found abundant material of *Mougeotia parvula* in conjugation. The *Mougeotias* conjugate so rarely that this fact is of some importance.

As to algal ecology the Hawes meeting of the Y.N.U. furnished one or two noteworthy facts. On rocks in Gayle Beck abundance of an alga was found which formed thick leathery strata, covering at least two or three square feet. It was blue-green in colour above and brown below. This could be stripped off the rock in sheets. It proved to be *Phormidium Retzii* (Ag.) Gom., an alga not uncommon in these situations, but seldom seen in such good development. It may be of interest to recall that a superficially similar alga found in Ling Gill at the Horton-in-Ribblesdale meeting, which proved puzzling to several who examined it, was formed on the blue-green alga *Scytonema alatum* (Berk.) Borzi. This latter, however, was accompanied by fungoid constituents which did not appear in the Gayle Beck specimen.

Another collection of interest was made on a dripping rock face in Widdale Beck. Here the chief constituent was *Vaucheria geminata*. There was also *Phormidium Retzii* in less amount, and also a heterogeneous mixture of *Cladophora*, *Spirogyra Grevilleana*, *Ulothrix zonata*, *Microspora floccosa*, and undetermined species of *Oedogonium*, *Zygnema*, and *Mougeotia*. Some amount of the mosses *Hypnum fluitans* and *H. cuspidatum* accompanied these algæ.

Distribution of the Crayfish (*Astacus pallipes*) (S. H. Smith) :

RIVER YORE AND TRIBUTARIES.—Fair numbers have been seen in the upper reaches round Hawes and in the River Bain, also in Lake Semmerwater. They are plentiful in the Roberts Beck near Copgrove and Burton Leonard. On 16th September Mr. R. W. Ward brought me 12 Crayfish from Copgrove, and these I turned into my pond at Heworth.

RIVER AIRE AND TRIBUTARIES.—Crayfish have been seen in the upper reaches of the Aire and also in the Otterburn Beck.

RIVER WHARFE AND TRIBUTARIES.—They are reported as being seen about Otley and also at Appletreewick.

LEEDS AND LIVERPOOL CANAL.—Crayfish were seen both at Skipton and Keighley.

RIVER DERWENT.—Mr. Langstaffe informs me that an angler caught a large Crayfish on rod and line at Scrayingham, and which had taken the bait—a 'gentle.'

Mr. Brewster of 'Flixton' informed Mr. W. J. Clarke that he could at anytime take a dozen crayfish from the Hartford River, the drain which runs along the foot of the Wolds and empties into the Derwent at Ganton.

RIVER COSTA.—The above informant caught an Eel about 1 lb. weight near the junction of this river with the Rye, and which, on being opened, yielded a good-sized Crayfish that had been swallowed whole and was in perfect condition.

I am indebted to Inspector R. W. Ward, of the Yorkshire Fishery Board, and Mr. D. Langstaffe for their assistance in supplying notes.

VERTEBRATE ZOOLOGY SECTION

West Riding (H. B. Booth) : A year ago, on 19th October, when we were holding this meeting, a violent westerly gale was blowing. Many trees were blown down, and several persons were swept off their feet. The day following, a Leach's Fork-tailed Petrel was picked up dead in Denton Park, Ben Rhydding, with both its legs broken. The day after that another Leach's Fork-tailed Petrel was taken to the Keighley Museum in a dying state and also a dead Jack Snipe.

A Nuthatch visited the bird-table at Bolton Abbey rectory all the winter until March. The Rev. C. F. Tomlinson hoped that it would secure a mate and nest there but he failed to find any further trace of it.

LITTLE OWLS.—In March a single Little Owl was shot in Denton Park. This is the only one that I have been able to trace in Upper Wharfedale, in spite of much inquiry. Some are reported to be about Grass Woods, Grassington, but I have failed to find them. A pair has successfully nested at Toftshaw (Mr. A. V. A. Swaine), and another pair is reported as nesting at Egypt, near Thornton, both within the city of Bradford. The gamekeeper says that they are common in Shire Oaks Wood, Healaugh, and they are shot at sight.

HERONS.—There were 23 nests in the Gargrave heronry on 19th April, and 26 nests, mostly 'well whitewashed,' on 30th May, all in oak trees. At Hubberholme there were again six or seven nests, but it is impossible to count them correctly, as they are all in tall, dense spruce. At Harewood there were 14 nests on 21st June, all with young in, and all in tall beeches.

At Grass Woods I have definite information from the head woodman and keeper that there has not been any Herons' nest there for several years, and never more than one or two altogether. He is a keen angler, and from his conversation there appears little chance of Herons nesting there while he is in charge.

I am indebted to Miss D. Steinthal for searching for the Bolton-in-Bowland Herons, which I failed to find last year. She tracked them down to Admiral Wood, where there was one nest containing young in a tall larch. From what I can gather there were two nests in the same wood last year. Major M. Wright, the owner of Admiral Wood, informs me that he does all that he can do not to disturb any birds so that the persecution they have suffered in their last two nesting sites should cease if it is not too late to save the remnant of what used to be the old Gisburn heronry.

I have to thank Mr. J. Eric Wheeler and his brother for their thorough investigation of the growing heronry in Shire Oaks Wood, Healaugh. There were 27 occupied nests—14 in spruce and 13 in oaks. The head gamekeeper informed them that when he went there in 1925 there were two Herons' nests, both in sycamores, and that there were more nests in 1935 than in 1934.

GULLS, ETC.—Since the Lesser Black-backed Gulls were banished from their nesting site at Malham several years ago, odd adults have been seen in the neighbourhood in the breeding season but whether they were nesting could not be proved. Mr. R. Butterfield saw a pair in June on Haworth Moor, that, by their behaviour, undoubtedly had young but he was unable to find the youngsters in the long heather.

Although the nesting stations of the Black-headed Gull in the West Riding are mostly decreasing in the number of pairs present that at Pinnau is increasing by leaps and bounds. Mr. W. J. Forrest counted in 1936, 408 nests containing eggs or newly-hatched young, ignoring empty nests. That was in contrast to 254 nests he counted in 1935, and 50 nests in 1934.

There were 67 nests containing eggs of the Black-headed Gull, at the

two reservoirs on Blackstone Edge, and a Sandwich Tern was seen at Copley, near Halifax, on 7th May (G. Edwards).

Mr. A. Gilpin reported two Little Terns on a large sheet of water near Swillington on 20th September. He got within four yards of one of them that was sitting on a post. This is an uncommon bird in the West Riding.

WHOOPEE SWANS.—The herd of adult Whoopers on Harewood Park Lake on 21st June consisted of 9 adult birds. One pair had hatched off 5 cygnets on the lake, and another pair had 3 cygnets and two added eggs on a fenced-off pond. These three cygnets are still alive and well, but the family of five fared badly with foxes. Three of the cygnets were missing and the father was found with a broken wing, probably caused in defence of his family. This was amputated, but he died a few weeks later, and his two remaining cygnets disappeared. Two unpinioned Whoopers, three or four years' old, are flying wild. It is curious that they always make off in a westerly direction, and usually for Farnley Pools or the River Wharfe. Mr. Gilpin informs me that he has never seen them on Eccup Reservoir—a large sheet of water and only about a mile and half away to the south.

I must beg of local sportsmen not to fire at these large Whooper Swans. They never travel far away, and constantly return to their native lake, anyone who sees a Whooper in flight will see an ornithological sight not easily forgotten.

GREAT CRESTED GREBES.—Owing to the drought in May the Grebes on the reservoirs fared badly, very few reared, unless with a second nest. The pair did not return to Eshton Tarn. At Malham Tarn a pair put in an appearance for a few days, and then left. The Grebes there have not been at ease since the Swans were introduced on the water. The pair at Coniston Cold and the two pairs on Harewood Lake again nested. At last a pair of Great Crested Grebes has nested and reared a brood on Semmerwater, and equally interesting is that a pair of Pochard has successfully reared a brood on Leyburn Moor, a new record for V.C. 65 (see *The Naturalist*, 1936, p. 220).

OTHER NESTING NOTES.—The Rev. C. F. Tomlinson told me of a curious site for a Grey Wagtail's nest, viz. about a foot inside the old hole of a Sand Martin on the river bank. When I saw it on 9th May the eggs were hatching, and I thought the young birds would be smothered by the dry earth dropping on them but they afterwards fledged.

Mr. J. E. Wheeler reports that Jays are common and are nesting in Shire Oaks Wood, Healaugh.

A pair of Dunlins nested on Ilkley Moor. I believe there is a nest there each year, the difficulty is in finding it.

In the fells I fear that the Peregrine Falcons have fared badly. One clutch of eggs was robbed, but it is just possible that the young may have fledged from one eyrie.

Owing to the dry, hard ground in May around Ilkley many young Starlings died in their nests through lack of food. Many pairs attempted a second nest—an unusual occurrence here. A pair in my garden had a nest with fresh eggs on 17th June, and were feeding noisy young at the nest on 14th July. A very late Bullfinch's nest was seen at Burley-in-Wharfedale. In mid-September they had a nest of half-grown young ones, but these were all found to be dead a few days later.

Mr. A. Gilpin has, as usual, continuously watched Eccup Reservoir throughout the winter. Goosanders were present on each visit from October 27th until April 11th. The largest numbers were seen on 21st December (8 ♂s. and 14 ♀s.), 15th March (12 ♂s. and 11 ♀s.), and 22nd March (12 ♂s. and 25 ♀s.). There was usually one or two Goldeneyes present during the same time, and 4 ♀s. on 23rd November, 3 ♂s. and 5 ♀s. on 8th March. A pair of Pintail on 2nd February and a Green

Sandpiper on 16th February and 8th March. Wigeon were fairly common at times, on occasions more than a hundred were present, but he had not seen a single Shoveler.

His most extraordinary record was that of Black-throated Diver (*Colymbus arcticus*), which remained from 3rd November to 1st December, 1935. Your recorder saw this bird. At times it made most unearthly yells, and more than once brought the reservoir keepers down in haste, thinking that some person was drowning.

Messrs. V. S. Crapnell, G. Edwards, H. Foster, W. Greaves, and F. Murgatroyd have worked at the birds in the Halifax District, particularly on the higher reservoirs, with their usual thoroughness. They report British Willow Tits in Hardcastle Wood on 2nd and 8th December, and on 5th January. Mr. Bolton, the gamekeeper, told them of a flock of Snow-Buntings on Wadsworth Moor in December, 1935, and they saw a Snow-Bunting on Cockhill Moor on 23rd February. The last few years Lesser Whitethroats have become common in all parts of suitable ground in the parish of Halifax.

The following birds, with dates appended, were at White Holme Reservoir. One Common Scoter on 22nd August; one Shoveler on 8th September and another on 13th; Tufted Ducks on 20th September and 4th October; and a Shelduck on 13th September.

A Great Northern Diver (*Colymbus immer*) was watched at close quarters on 19th July (an unusual date). An Oystercatcher on 15th May and a Ruff on 16th August. Twenty Dunlins on 13th September and 13 on 4th October. Five Curlew-Sandpipers on 15th September, and four Turnstones on 13th and 15th September. Little Stints were present (from one to four), on 13th, 15th, 19th, and 20th September. One bird, a cripple, was handled, and remained for a fortnight. One Knot on 19th and 20th September.

Ringed Plovers were seen in numbers at White Holme and Blackstone Edge Reservoirs from 19th July to 20th September, and Sanderlings on 26th July, 16th, 22nd, and 23rd August, and 13th and 15th September. A Sanderling in company with 23 Dunlins on Blackstone Edge Reservoir on 10th May, and a Goldeneye on Withens Reservoir on 15th March.

A Black-necked Grebe (*Podiceps nigricollis*) was seen at Swillington on 9th August by Messrs. W. Bennett, V. S. Crapnell, G. Edwards, and H. Foster.

A Shelduck was reported at Chelker Reservoir in August by Mr. W. F. Fearnley.

York District (S. H. Smith): The year opened with plenty of rain, soon changing to hard frost, with snow and sleet continuing until April and falling heavily on the 12th, 13, and 14th. There was frost at night nearly all the month, 7° F. being registered on the 19th, but little rain locally, and the weather remained dry until the end of May. There was a lot of rain during the summer and many heavy showers destroyed young game birds during June and early July.

Swallows and Sand-Martins arrived later than last year, but House-Martins and Swifts both appeared on the corresponding date. Most of the summer-visiting birds were later than usual and were no doubt held up by contrary winds delaying their sea crossing from the Continent.

Landrails (Corncrakes) were again very scarce, and I can only locate two pairs here, as different observers undoubtedly report the same birds on varying dates.

Curlews are increasing as a breeding species and have been recorded at Buttercrambe, Strensall, Sandburn, Suet Carr, Alne Moor, Towthorpe, and Allerthorpe Common, and a number of young successfully reared. Three pairs nested at Skipwith, and Mr. Vear photographed them at one selected nest.

This well-known bird photographer deplores the fact that too many

people are visiting the Black-Headed Gullery on the Common and the Gulls are becoming unduly shy. They are leaving their old homes on the ' Gull Ponds ' and transferring to the line dykes, where they present a beautiful sight against the dark background of the trees. They are fairly safe on the island in the middle of the pond as the water is too deep for visitors to wade across and steal their eggs. On 31st May plenty of young birds were about and in all stages of growth ; there was also quantities of litter, paper bags, orange peel, cigarette packets, etc., these latter having been dropped on some of the Gulls nests. If visitors do not stop leaving this litter it is probable that the Common will be closed in the near future.

Kingfishers nested at several points around York and are seen daily along the Rivers Ouse, Foss, and Derwent, and they regularly visit the pond in my garden to take toll of roach fry and sticklebacks.

Heron have been seen regularly, and at Huntington three and sometimes four together were fishing in the River Foss.

Dippers were again nesting and several broods have been reared.

Nightjars have become more rare each year and have even deserted Skipwith, where at least three pairs always nested.

Three nests of the Turtle Dove were found at Skipwith, and Mr. Vear obtained a series of delightful photographs, and all the young birds were reared.

Other species that nested at Skipwith are Green and Great-spotted Woodpeckers, Jays, Blackcap Warbler (two nests), Shoveler Duck, Teal, and Mallard. Redshanks, once numerous, have gradually decreased and none were seen on the usual nesting grounds. The Brown Linnet is more numerous on the Common than for several years past, and there is a corresponding decrease there in Willow Warblers.

A Hawfinch nest with three eggs was found at Escrick Park on 21st June, and on 22nd June a nest of the Lesser Whitethroat with four eggs was found at Huntington.

Several Tree Creepers were seen in Hovingham Woods on 10th May.

A nest of the Tree Creeper with three eggs was found in Strensall Wood on 30th May, and a Goldfinch nest with five eggs at Huntington on 27th June.

On 22nd April a male White Wagtail was seen at Huntington and later seen on various dates, and evidently it nested near as on 21st May a pair of adults with three young ones were seen, they stayed about for a few days and then disappeared.

A Woodcock's nest with four eggs was found at Buttercrambe on 1st April and another with three eggs at Huntington on 3rd April.

On 10th May, Pied Flycatchers, Tree Creepers, and a Lesser-spotted Woodpecker were seen in Hovingham Woods.

Mr. Vear saw a female Cuckoo in the stack-yard at White Syke Farm (Strensall) on 21st June. This bird was watching from a fir tree a pair of Pied Wagtails which had a nest in a straw stack ; she repeatedly flew over the stack and several times alighted on the top to stretch her wings and preen herself, and reluctantly flew away when the Wagtails attacked her. This was kept up for about one and a half hours that day and afterwards for five days when she laid an egg in the Wagtails' nest. In due course the young Cuckoo was hatched and ejected the Wagtails eggs and was reared by the foster parents. A charming photograph of a Wagtail perched on the shoulders of the interloper whilst it is being fed was the result.

Large flocks of Fieldfares visited the York district during November and December, 1935, and Redwings were also numerous—a flock seen at Huntington on 18th January, 1936, would total at least 200 birds, an unusual number for this species in this area.

Hooded Crows have become very rare and I did not see one during the year.

Owing to heavy rainfall, the River Foss at Huntington flooded hundreds of acres of land, and this remained from 11th to 30th August, during which time it attracted Curlews, Snipe, Golden Plover, Herons, and a small party of eleven Greenshanks. This little flock stayed until 9th September, less one, which was shot on 5th September and determined the identity of the species.

There was considerable movement among migrating birds at the end of September, huge flocks being heard passing overhead in the night-time. A party of Wheatears were seen at Tilmire on 26th September, evidently on migration, and on 27th September Wild Geese were going over Huntington flying S.E. 17 at 8-30 a.m., 27 at 8-45 a.m., 50 at 9 a.m., followed by two more flocks not counted; these Geese are probably Pink-footed.

Two pairs of Great Crested Grebes were seen on the lake at Castle Howard, one pair (as usual) nested dangerously near the road and on very shallow water. They were successful in spite of the risk and early in August they were feeding two well-grown young, and a single bird had another youngster in its care, the fourth adult was not to be seen.

All reports denote an increase in numbers of the Little Owl despite efforts that are being made to destroy them. On 16th April I saw a pair in an oak tree at Whenby, they had occupied a hole in the base of the tree only two feet above ground; it was, however, a very safe retreat for them and I hear they duly hatched and reared a family. Barn Owls, Long-eared and Tawny Owls are all very plentiful, and the latter particularly is now to be found in the city in several haunts.

I am indebted to Messrs. V. G. F. Zimmermann, E. W. Taylor, Fred Veal, Chas. Allen, A. W. Ping, and Arthur Smith for kindly sending notes to help in compiling this report

ARRIVAL OF SUMMER VISITING BIRDS, 1936.

WILLOW WARBLER	...	York, 6th April.
CHIFF CHAFF	...	York, 9th April.
WHEATEAR	...	York, 11th April.
SAND-PIPER	...	York, 13th April.
SWALLOW	...	Shipton, 18th April; Cawood, 22nd April; York, 26th April; Stamford Bridge, 27th April; Huntington, 27th April.
CUCKOO...	...	Skipwith, 19th April; Buttercrambe, 24th April; Huntington, 27th April; Stamford Bridge, 28th April.
SAND MARTIN	...	York, 19th April; Stamford Bridge, 25th April; Shipton, 26th April.
HOUSE MARTIN	...	York, 22nd April; Huntington, 29th April; Stamford Bridge, 7th May.
WHITETHROAT	...	Heworth, 24th April; Huntington, 27th April.
SEDGE WARBLER	...	Huntington, 29th April; York, 30th April.
SWIFT	...	Huntington, 5th May; York, 5th May.
GARDEN WARBLER	...	Stamford Bridge, 7th May.
PIED FLYCATCHER	...	Hovingham Woods, 10th May.
BLACKCAP WARBLER	...	Huntington Woods, 12th May.
SPOTTED FLYCATCHER	...	Huntington, 12th May.
TREE PIPIT	...	Huntington, 12th May.
WHINCHAT	...	Huntington, 12th May.
LANDRAIL	...	Clifton Ings, 5th and 20th June; Huntington, (or CORNCRAKE) 14th June. Also at Ruswarp, 5th June.
GRASSHOPPER WARBLER	...	Towton Wood, 1st July.

North Riding (W. J. Clarke): During 1936 Teal, Water Rails, Goldfinches, Greenfinches, Spotted Flycatchers, and in the Whitby district Stonechats, Sand Martins, and Corn Buntings have been noticed in increased numbers. The latter is still very scarce about Scarborough.

Wood Warblers, Whinchats, and Common Scoters have been less numerous, while the Corncrake is reported as decreasing about Whitby, and at Scarborough only a single example was heard on the Castle Hill on 11th May, 1936, and it only stayed one day.

The Hooded Crow still continues to be seldom seen in the Scarborough area.

Hawfinches have been sparingly distributed throughout the area. Small parties of Siskins were observed in the Whitby district.

Crossbills have been seen on several occasions. Six were noticed near Scarborough on 25th November, 1935, and six more a few days later. Two birds were seen at Silpho on 30th January, 1936, and several in the Goathland district.

The Albino Sparrow, which has lived about the recorder's garden for the last two years, paired last Spring with a normally-coloured mate and reared a brood of young ones, but none of them show any signs of white.

White Wagtails were seen in the Scarborough area on 3rd January, 20th March, and 1st October, 1936.

Willow Tits were observed by Mr. H. G. Alexander at two places at Stainton Dale, and also in the wooded undercliff on 10th September, 1936. He also records seeing this bird in Forge Valley in 1935.

Waxwings were seen in the Whitby area on various dates between 26th November, 1935, and early in April, 1936.

Pied Flycatchers occurred in their usual numbers in suitable localities, and nested.

Reed Warblers visited the Scarborough Mere and were seen and heard singing on several occasions. Nests were not sought for.

Dippers nested in all their usual places, in some instances occupying sites not tenanted in 1935.

House Martins were present in good numbers in the country districts, but have been scarce about the towns.

Great spotted Woodpeckers have been heard drumming near Whitby, and together with the Green Woodpecker continue to inhabit the woods near Scarborough.

An immature Cuckoo was seen in Raincliffe Wood by Mr. T. Hyde-Parker, so late as 26th October, 1935.

Kingfishers nested at several places on the streams in both the Whitby and Scarborough areas. Their numbers are well maintained.

Barn Owls have been seen several times during the year at Hackness, Raincliffe Wood, and Wykeham, and three pairs nested in the Whitby district.

Tawny Owls continue numerous about Scarborough, breeding within the Borough boundary. Long-eared Owls still remain scarce after the cutting down of the fir plantations they favoured.

A Little Owl was seen near Seamer on 20th June, 1936. This bird does not appear to become more plentiful in the Scarborough district.

Montagu's Harrier has not been seen during 1936, but was seen feeding young in 1935.

An immature Rough-legged Buzzard was captured alive at Robin Hood's Bay on 27th November, 1935, and escaped after some months in confinement.

Peregrine Falcons were seen at Scarborough on 7th June, and 22nd September, 1936.

The Merlin continues to nest on the Moors at both the Whitby and Scarborough sides.

Shags visited the coast as usual during the winter months and were seen in the harbours at both Whitby and Scarborough. These visitors are nearly always immature, but an adult was seen at Whitby on 25th February, 1936.

During the brief spells of cold weather in the last winter, Pochard,

Mallard, and Goldeneye were numerous. A pair of Pochards nested on Throxenby Mere and were seen, accompanied by five young ones, on several occasions during July, 1936.

An adult Eider Drake was seen at Saltwick, near Whitby, on 18th May, 1936, and was watched through glasses for some time by Mr. F. Snowdon.

Woodcock now nest freely in the Whitby district as well as at Scarborough. Sportsmen say that the big autumnal migrations of these birds do not now take place to the same extent as formerly.

Purple Sandpipers were seen at Whitby, and a flock of about 30 frequented the rocks near the Marine Drive at Scarborough.

Common Sandpipers appeared at all their usual breeding stations.

Golden Plovers were fewer in numbers on the Moors during the Spring.

An immature Iceland Gull was seen in the Harbour at Scarborough on 22nd January, 1936.

A Glaucous Gull in second year's plumage visited Scarborough Harbour on 25th January, 1936.

Several hundred pairs of Black-headed Gulls nested at Foulisike. One picked up dead at Scarborough on 18th April, 1936, had been marked as a young bird at Jutland, Denmark, on 8th July, 1935.

Fulmar Petrels visited the Castle Cliff at Scarborough very early in 1936. On 4th January there were 40 or 50 birds there, and many more on 8th January.

A Slavonian Grebe stayed for several days about the harbour at Scarborough in February, 1936.

Little Grebes nested and reared their young on Throxenby Mere in 1936.

Several Red-legged Partridges were seen in an exhausted condition on the shore at Scarborough on various dates in the Spring, and one was caught on the South Sands on 2nd April, 1936. This bird is said to be increasing in the Whitby area.

Red Grouse have done well on the Moors this year.

The recorder is grateful to Messrs. T. N. Roberts, of Scarborough ; A. S. Frank and F. Snowdon, of Whitby for information which has been used in compiling this report.

Mr. Chislett reports that three pairs of Nightjars nested in a small area near Goathland.

(To be continued)

Vernon Wilson has an interesting paper on The Upper Jurassic Rocks of the Country between Malton and Castle Howard, East Yorkshire, in *The Proceedings of the Geologists' Association* issued in October. It is accompanied by an excellent map, and sections taken at Malton and Appleton-le-Street.

The North Western Naturalist for September prints a paper by J. S. Gayner and Sidney Melmore on 'Late Glacial Lacustrine Conditions in the Vale of York and the Tees Basin,' which had recently been privately printed by the authors ; and also 'Lancashire Watersheds,' by George Simonds Boulger and J. Cosmo Melvill.

The Entomologist for December contains '*Hyponomeuta rorellus* in Suffolk and Norfolk (Lep.)' by J. C. F. Fryer (with plate) ; 'Further Notes on *Zygaena achilleae* and *Z. filipendulae* in the Western Highlands,' by R. James ; 'The butterflies of St. Kitts,' by A. Hall ; '*Rhithrogena semicolorata* Curtis and *R. semitincta* Pictet (Ephemeroptera)' by D. E. Kimmins (with figures) ; 'New Forms of *Papilio* from the Indo-Australian region,' by A. G. Gabriel ; 'Descriptions and figures of new Brazilian Dryopidae (Coleoptera),' by H. E. Hinton (with figures) and several notes and observations.

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Two MEETINGS will be held in the Library of the Church Institute, Albion Street, Leeds, on Saturday, February 20th, 1937, at 3-15 p.m. and 6-30 p.m.

The following papers will be read :—

' The Present Position in the Study of Bird Migration,' by W. R. Grist, B.Sc.

' The Developments of the Axolotl, *A. tigrinum*,' by Ellen Gallwey.

' The Development of a Young African Python, *P. sebae*,' by Ellen Gallwey.

' White Wings ' (illustrated), by the President.

' Birds of Skokholm and Grasholm Islands ' (motion pictures), by W. Bennett.

Members and Associates are cordially invited to attend and bring notes, specimens and lantern slides. Will Officers of Affiliated Societies kindly notify their members?

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MORE ABOUT CLAVICEPS

T. PETCH, B.Sc.

IN *The Naturalist* for July, 1935, I published some notes on the genus *Claviceps*, which had formed the basis of a talk to the Mycological Committee of the Yorkshire Naturalists' Union at Ingleton in September, 1934. Since the latter date, further observations have been made, which confirm and extend the previous statements.

In 1934, I collected, or was sent, ergots from the following grasses:—*Agropyron pungens*, Seafeld Bay, Suffolk, September 1st; *A. repens*, North Wootton, September 7th; *Amophila arenaria*, Yarmouth, September 28th; *Lolium perenne*, Hedon, August, and Gorleston, December 26th; *Glyceria fluitans*, Mendlesham, Suffolk, July, Grimston, Norfolk, August, Aldbro', E. Yorks, August; *Festuca arundinacea*, Goole and Hedon, August; *Dactylis glomerata*, Hedon, August; *Brachypodium sylvaticum*, Ingleton, September; *Digraphis arundinacea*, Aldbro', August; *Bromus giganteus*, Ingleton, September; *Arrhenatherum elatius*, Aldbro' and Hedon, August; and *Phragmites communis*, North Wootton, December.

All these were kept dry in an air-tight uniform case in my study during the winter, and were planted out on wet sand in flower-pot saucers on April 17th, 1935. The ergots from *Phragmites* showed abundant germination on June 15th, but the others did not germinate until July. The various collections were kept separate, but are grouped for this account. In the case of the ergots from *Lolium perenne*, 57 germinated out of 72, or 79 per cent.; from *Glyceria fluitans*, 203 out of 405, or 50 per cent.; from *Festuca arundinacea*, 43 out of 73, or 59 per cent.; from *Arrhenatherum elatius*, 27 out of 40, or 67 per cent. The percentage germination of the ergots from *Phragmites* was not recorded, but nearly 1,100 were germinated. In the other cases, with one exception, germination was good, but the number of ergots available was too small to make the percentage of any value. The exception was the ergot on *Brachypodium*, none of which germinated, all being attacked by a *Fusarium* which reduced the ergots to shells.

Early in 1935, I was informed that it had been proved that ergots would not germinate unless they had been frozen. The foregoing results disprove that, for, with the possible exception of the ergots on *Phragmites* and one collection on *Lolium*, none of those under experiment could have been subjected to freezing. However, to test the point further, another set of trials was made in 1936.

Ergots were collected in 1935 from *Agropyron junceum* and *A. repens*, Saltend, September 9th; *Glyceria fluitans*, Aldbro', September 7th; *Lolium perenne*, Hedon, September 6th; *Dactylis glomerata*, Hedon and Dartington, September; *Holcus mollis*, Aldbro', September 7th; *Digraphis arundinacea*, Aldbro', September 7th; and *Phleum pratense*, Hedon and Aldbro, September. The first two of these collections were each divided into two approximately equal lots, and one lot of each was stored during the winter as before. The other two lots, with the remaining collections, were exposed to the weather from December 13th onwards, being enclosed in flat bags of silk gauze which were laid on the surface of soil in a ten-inch flower-pot, covered with wire netting to keep off birds, etc. They experienced hard frosts in December and January, and particularly in February. On April 18th, 1936, the ergots were removed from the bags and placed on wet sand as in the previous year, those which had been stored indoors being similarly treated at the same time. None of the exposed ergots showed any sign of germination at that date.

The ergots which had been exposed began to germinate on May 10th, almost all germinating at the same time. Of those from *Agropyron*, 273 out of 282 germinated, or 97 per cent., and of those from *Glyceria*, 134 out of 138, or 97 per cent. Those from *Lolium perenne* gave 75 out of 89, or 84 per cent. The remainder germinated almost equally well, but the numbers available were smaller.

The ergots which had been stored indoors during the winter did not begin to germinate until July 9th, and they continued at intervals until September. On October 1st, 93 out of 293, or 32 per cent., of those from *Agropyron* had germinated, and 39 out of 134, or 30 per cent., of those from *Glyceria*.

Thus, in these trials, exposure to the weather during the winter induced a more rapid and more uniform, and a higher percentage of, germination. But it is not correct that ergots from the grasses named will not germinate unless they have been frozen.

Ergots from *Phragmites communis*, collected at North Wootton in November, 1935, and kept dry until they were placed on damp sand on April 18th, 1936, began to germinate on June 16th. These were grown for comparison and cultures. Of 434 germinated in 1936, 299 bore one clava, 91 two clavæ, 25 three, 8 four, and 1 six. Some were long-stalked, but the stalks varied in length from 12 mm. to less than 1 mm., and the majority were of medium length.

184 ergots from *Glyceria fluitans* which had failed to germinate in 1935 were air-dried in September of that year

and kept dry indoors during the winter. On April 18th, 1936, they were placed on wet sand, and they began to germinate on July 15th. By the end of August, 116, or 63 per cent., had germinated.

GENERAL OBSERVATIONS

At the beginning of germination, the cortex of the ergot splits longitudinally for a short distance, and sometimes a semi-circular flap of the cortex is turned back. The clava then grows out directly from the internal tissue, there being no production of mycelium on the exterior of the ergot. The radiating mycelium at the base of the clava, which is usually figured for *Claviceps purpurea*, is a late development, after the clava has attained full size. In very many cases, perhaps the majority, in these trials, it did not occur. It was exceptionally well developed on *Claviceps* from winter-exposed ergots from *Glyceria fluitans*, which were left for some time after the clavæ were fully grown. It may also occur, though more rarely, in '*Cl. microcephala*' from *Phragmites*.

The head of *Claviceps purpurea* is described as purple. If, however, the fungus is developed on sand, carefully watered so that the head is not wetted, it remains cream-coloured or ochraceous. In large examples the head is evenly subglobose, but in small examples it may be tuberculate. Tulasne stated that the head of '*Cl. microcephala*' became tuberculate on drying because of its looser texture. It is, however, in general, tuberculate when fresh, though sometimes it may be even, and retain that shape on drying. It is generally purple, but may be cream-coloured. Small examples of *Cl. purpurea* may have a purple tuberculate head and be indistinguishable from '*Cl. microcephala*.' It is not possible to separate the alleged two species on that character.

Claviceps microcephala is said to differ from *Cl. purpurea* in soon imparting a purple colour to alcohol. Fresh specimens of *Cl. microcephala* from *Phragmites*, when placed with their ergots in rectified spirit, did not yield any colour, but *Cl. purpurea* from *Glyceria fluitans* gave a faint purple.

The ascospores are filiform, 0.75–1 μ diameter, and continuous. They are shot out of the perithecium, and may be seen floating in the air, if the saucer containing the *Claviceps* is placed in a beam of sunlight. If placed in water, they become septate, with septa down to 8 μ apart. Globose or oval swellings, about 2.5 μ diameter, then appear along the spore, and germ tubes are produced from these, but sometimes a germ tube arises without any previous swelling. On oatmeal agar, growth was slow, the first appearance on the slant being a sparse covering of short, more or less erect hyphae, which bear conidia terminally on short lateral branches. The

hyphæ are irregular, 4μ diameter, inflated here and there to $5-7\mu$, and sometimes forming chains of globose cells, up to 9μ diameter. Sometimes a cluster of short branches occurs at the apex of an inflated hypha. The conidia are cylindrical with rounded ends, or oblong oval, $5-12 \times 2-3\mu$, rarely 4μ broad and ellipsoid. Subsequently a thin white continuous film of mycelium covers the slant or is confined to the upper part of it. No sclerotia were formed, and the agar was not coloured.

There was no difference between the cultures of the *Claviceps* from *Phragmites* and those of the *Claviceps* from *Glyceria*. It has not been possible in these experiments to observe any morphological character by which *Claviceps microcephala* can be separated from *Claviceps purpurea*.

The *Claviceps* grown from the ergots on *Glyceria fluitans* were normal *Cl. purpurea*. The parasite, *Barya aurantiaca* Plowr. and Wilson, which was re-described by Cooke as *Claviceps Wilsoni*, did not appear on any of the *Claviceps* grown in 1935 and 1936. (Incidentally it may be noted that the best illustrations of *Barya aurantiaca* are contained, under the name *Claviceps purpurea* var. *Wilsoni*, in *Diseases of Field and Garden Crops* by W. G. Smith, published in 1884.) Y. Tokunaga, when growing *Claviceps* from sclerotia on *Sasa paniculata* in Japan, found a parasite which has been described as *Cordyceps clavicipiticola* Tokunaga and Imai.

Ergots are frequently attacked and almost completely eaten by insects. This is especially true of the ergot on *Arrhenatherum elatius*, most of the examples of which were found damaged, both in 1935 and 1936, apparently by a small weevil.

It is to be noted that, contrary to the general belief, the *Claviceps* from the ergots on some grasses, e.g. *Phragmites communis*, liberate their ascospores long before their hosts are in flower. The question then arises, what becomes of the ascospores, or their product, in the interval?

FIELD NOTE

Cream-Coloured Short-Tailed Field Vole and Melanistic Orkney Vole.—Mr. A. Gordon writes me that he has a beautiful cream-coloured specimen of the Common Field Vole, with pink eyes, that was killed near Helmsley in November, 1936. A few days later he received from a friend in Kirkwall a melanistic variety of the Orkney Vole, of a deep glossy black colour. Both are females and he has mounted them for his collection.—H. B. BOOTH.

BIRD LIFE AROUND JERVAULX IN WINTER

JOHN P. UTLEY, B.Sc.

AFTER weeks of gales, heavy rains, and floods, Friday, January 8th, was a day to be enjoyed, a day of wonderful peace and quiet and full of sunshine.

Near the banks of the Yore between East Witton and Jervaulx is a small wood standing in rather marshy ground. After the recent heavy floods the site of the wood and a great many acres of surrounding land were under water.

This little wood is always of interest to the ornithologist. It is inviting, and rarely fails to make a visit most agreeably satisfactory, and, at times, is apt to produce a surprise for those who are patient and have learnt the art of quiet waiting and watching.

Leaving the car on the grass verge of the highway, I donned an old bespattered trench coat and a weather-beaten cap, got my glasses, and made away down a hedgeside towards a promontory of dry land which jutted across the flooded fields to within twenty yards of the centre of the wood.

Feeding by the hedgeside were Thrush and Redwing, and amongst the sheep in the pasture field to the west a vociferous crowd of Starlings. Here and there are a few large hawthorn bushes, not quite so heavily laden with fruit as they were a month ago, but still offering suitable repast to Blackbird and Fieldfare; though on this particular day the male bird of the former was busy practising his notes—and a very good attempt he was making. Already his beak is losing its greenish hue and taking on more brilliant colouring.

A mixed party of Rooks and Jackdaws feeding by the edge of the water made noisy protest at my approach and betook themselves to the tree tops. On reaching the end of the promontory I was fortunate in finding a mass of sawn tree trunks collected and deposited there by the recent floods. Most of them were stripped of bark, and the hue of my old 'mac' matched them perfectly, so finding a place from which I had a good unobstructed view, I squatted in the midst of them as conformably as possible, while a Robin from the top of a half submerged gate post near by eyed me—expectantly, I think, for he soon burst into song.

After a short while the Rooks and Jackdaws who had been watching proceedings from the tree tops evidently decided that I was but a trick of the sunlight and returned to their feeding.

The field at the east side of me was stubble, but part of it had been ploughed. Standing on one leg among the stubble and very much enjoying the sunshine were numbers of a flock of Lapwing; and feeding in the shallows where the

upturned furrows ran under the water was a pair of Redshank. Occasionally the latter would make a short flight of a few hundred yards, whistling as they went, to the other side of the field, but each time they came back.

The call of a Bullfinch drew my attention to the wood, and as my eyes swung round they detected a movement on the stump of an old tree at the edge of the wood. Focussing the glasses I picked out a Green Woodpecker steadily climbing to the top. On arriving there he faced me—and the sun, which was behind me—and spent a busy five minutes with his toilet. As I was observing him he suddenly appeared to fly straight at my head; I quickly lowered the glasses in time to see him alight on the trunk of a tree not more than five yards away and commence a meticulous search for food. Never before have I been able to observe so closely, and unaided, this wonderful bird in action. After a thorough scrutiny of the tree and numerous tappings at various points he flew farther away.

Soon a violent splashing just inside the wood needed an explanation, and I was rewarded by seeing forty-two ducks slowly come out from among the partly submerged scrub into a big stretch of quiet water on my left. These were mainly Mallard, but I counted twelve Teal and three Shovellers.

Presently the cry of a Moorhen from a clump of Willows attracted me, and here both Moorhen and Dabchick in considerable numbers were swimming about and in and out of the dense bushes. Rising behind and above the Willows is a clump of Pine, surrounded by Beech, Alder, and Sycamore. Here Tits were very much in evidence, and by careful watching I was able to differentiate four varieties: Great Tit, Blue Tit, Coal Tit, and Marsh Tit. Coal Tits were the most numerous, but very few Great Tits were seen.

As I was watching the Tits a movement was noticed among the cones near the top of one Pine tree, and after a little patience I was granted a view of a pair of Crossbills. They are not often recorded in this locality.

A sharp movement, apparently under my nose, almost startled me, and glancing down I saw a Jenny Wren making a most interested inspection of a corner of my 'mac.' It is a most beautiful and interesting little bird when seen at close quarters. I remember when watching on a previous occasion a Wren perched on the toe of my boot and burst into his hasty song.

Quite suddenly the Wren disappeared—he can so easily do this trick, and from the wood came the harsh cries of a Mistle Thrush in great agitation: other birds took up the note and the Rooks and Jackdaws returned to the tree tops. What was afoot? I caught a flash of brown among the

tree trunks, but could discover nothing definite. Then, from the undergrowth a bird flew straight to the top of the stump where, some time earlier, the Green Woodpecker had rested awhile. Now another bird performed toilet operations there, this time a Sparrow Hawk—the clean up after the feast. She—it was a female bird—remained about ten minutes, then flew off in search of a further coursing incident. Scarcely had she disappeared from sight when a Tree Creeper assiduously climbed the same tree trunk, and business went on as usual. The panic was soon over.

A shadow on the water caused me to look up, and gliding down to a temporary island were four Herring Gulls. They did not stay long, but they disturbed a couple of Pied Wagtails which had been feeding there.

Near the Willow clump a few stout thistle stalks stood out of the shallow water, and busily pulling a head to pieces was a Greenfinch. I saw both Chaffinches and Bramblings at different times. Chaffinches are never so common around here in winter as in summer.

A flock of Wood Pigeons hurried back to the wood from a forage in the fields, and a party of Siskins were having a busy time among the trees just opposite. There were a few hasty 'quacks,' much splashing, and the ducks rose as one bird from the quiet water and commenced circling around overhead. A party of firewood gatherers approached and I judged further watching would be useless, so after a good stretch retraced my steps along the hedgerow, preceded by that dainty little bird the Hedge Sparrow, or Accentor, whichever you will, and a flight of Lesser Redpolls dropped away to a spinney near the Abbey. Yes, that wood will be worth a few more visits this year.

**TRICHOSTOMUM CRISPULUM VAR. NIGRO-VIRIDE
BRAITH., PLAGIOBRYUM ZIERII LINDB. AND
FUNARIA CALCARIA WAHL. IN STAFFORDSHIRE**

T. H. B. BEDFORD

Trichostomum crispulum var. *nigro-viride* is recorded in the *Census Catalogue of British Mosses*, 2nd Ed. 1926, for Herefordshire (V.C. 36), Derbyshire (V.C. 57), Mid-west Yorkshire (V.C. 64), Westmorland with North Lancashire (V.C. 69), Denbigh (V.C. 50) in Wales and North Kerry (V.C.I. 2) in Ireland. The supplement to the *Census Catalogue* which appeared in 1935 contains no additional vice-county records. It would appear, therefore, that the var. *nigro-viride* of *Trichostomum crispulum* has a relatively restricted distribution. The somewhat scattered areas from which it is recorded would, however, suggest that a careful search in suitable localities in the intervening vice-counties may perhaps reveal

its presence. I have recently found this moss in the Manifold Valley near Wetton in Staffordshire (V.C. 39). A search on the limestone rocks on the hills on the left banks of the river near Red Hurst cannot fail to be successful. It is also to be found in several other localities in the neighbourhood. All attempts to discover it in the Staffordshire portion of Dove Dale or in Hall Dale have so far been unsuccessful. *Trichostomum crispulum* var. *nigro-viride* is a striking and well-defined moss in Staffordshire, although intermediate forms are occasionally encountered. More information concerning the distribution of this interesting moss is desirable.

Plagiobryum Zierii is not recorded in the published lists for Staffordshire, although it has been reported from the neighbouring vice-counties, Derbyshire (V.C. 57) and Shropshire (V.C. 40). These vice-counties lie respectively on the east and on the west borders of Staffordshire. It is, therefore, somewhat surprising that the moss has not previously been discovered in the intervening vice-county. I have found this beautiful moss in the west end of Hall Dale near Stanshope. It is growing on both the north and south slopes of the dale. No fruiting specimens have so far been observed.

Funaria calcaria was recorded for Dove Dale by Garner in his *Natural History of the County of Stafford*, London, 1844. He states that it is common in the limestone district. Unfortunately, Garner frequently recorded specimens obtained from over the county border as examples of the Staffordshire flora. We are, therefore, left in some doubt as to whether Garner's record is for the Derbyshire or for the Staffordshire portion of Dove Dale. Mr. W. H. Dixon informs me that he has found *Funaria calcaria* on the Derbyshire side near the south end of Dove Dale. Bagnall, in *The Journal of Botany*, Vol. 34, 1896, mentions *Funaria calcaria* as growing by the side of the lane from Mill Dale to Ilam. As this lane, now a metalled road, is over four miles in length, a more precise record of a locality would seem desirable. I have found *Funaria calcaria* in the west end of Hall Dale, near Stanshope. It is particularly abundant on the north slope of the valley where specimens were observed in fruit.

I am indebted to Mr. W. H. Burrell for his kindness in confirming the identifications. A Staffordshire specimen of these mosses has been placed in the herbarium of Leeds University.

Science Progress (Vol. XXXI, January 1937, No. 123), Arnold, 7/6, included the following: 'The Regulation of the Hæmaglobin in the Blood of Mammals,' by A. E. Boycott; 'Cohesive Forces in Metals,' by N. F. Mott; 'Petrology and Modern Road Problems,' by Bernard H. Knight; 'Resinous Plant Products,' by T. Hedley Barry; two other main articles, summaries of recent advances in science, Notes, and Reviews.

LEPIDOPTERA IN THE DONCASTER AREA IN 1936

GEO. E. HYDE

IN a general way, 1936 has been a rather poor year for the lepidopterist and many moths and butterflies, including a big percentage of the normally common species, were down in numbers. Probably the lack of sunshine in the spring and early summer had a great deal to do with the paucity of butterflies, but it hardly accounts for so many moths being scarce. Among the early species of moths the *Hybernias* and *Taniocampas* were down, and most of the early spring night-feeding moth larvæ, both *Noctuidæ* and *Geometridæ*, were below their normal numbers. Even in favourable seasons, South Yorkshire is not a good area for butterflies, though by no means a poor one for moths, but certain adjacent parts of North Lincolnshire produce a greater number of interesting species of butterflies. During the past summer the following butterflies, normally found locally in reasonable numbers, were rather scarce: Orange-tip (*E. cardamines*), Dark Green Fritillary (*A. aglaia*), Green Hairstreak (*T. rubi*), Small Copper (*C. phlæas*), Silver-studded Blue (*L. ægon*). On the other hand the Brimstone (*G. rhamni*) appeared in larger numbers than during the last few years in its Doncaster locality, and the Wall (*P. megæra*) was certainly as common as usual in its haunts near here.

Among the *Vanessas* the Small Tortoiseshell (*V. urticae*) was seen in big numbers both in the larvæ and winged state during August and September, and larvæ of the Red Admiral (*P. atalanta*) were not uncommon, though a rather large percentage proved to be ichneumonated or "stung." The Peacock (*V. io*) was out in normal numbers and was certainly commoner here than in 1935. Very few specimens of the Painted Lady (*P. cardui*) were seen locally or in any of the southern districts I visited. I was pleased to note and capture several examples of the Broad-bordered Bee Hawk moth (*M. fuciformis*) within three miles of Doncaster, but few Hawk moth larvæ were found locally this year. Usually I obtain those of four or five species of these fine insects. The practice known as 'sugaring' failed to produce many prizes and, even on apparently favourable nights, very few moths appeared. According to reports from other districts, both north and south, similar results have been general this year. I may add that I found most moths and butterflies down in numbers in South Lincolnshire, Hampshire, and Cambridgeshire during July and August, and in South-east Kent in early September butterflies were scarce. Normally, the Adonis Blue (*L. bellargus*) is out in big numbers in the last-mentioned district in late August and early September, but this year it

was very down in numbers. Several specimens of the Leopard moth (*G. pyrina*) were caught in Doncaster gardens last summer, the species is not often found here in more than odd numbers. The larvæ, a wood-feeding creature, lives in the trunks of various trees (elm, pear, apple, ash, etc.) for two years. Autumn larvæ have been rather scarce and the late flying moths, both *Noctuidæ* and *Geometridæ*, were down below normal.

THE SEA CAMPION (*SILENE MARITIMA* WITH.) ON WHERNSIDE

CHRIS. A. CHEETHAM

IN Arnold Lees' *Flora of the West Riding* this plant is stated to be 'Native; mural limestone scars; very rare.' He gives Moughton Fell as the known habitat, and he also inserts (Whernside; Windsor, 'report') indicating that this is possibly an error of name or localisation, and in any case it requires confirmation. On Moughton it grows plentifully on Long Scar at 1,300 ft. O.D., this being at the south end of the Fell; it grows sparingly at Moughton Scars about a mile away on the west side and also near Moughton Plantation on the east side of the hill; in these places it is about the 1,000 ft. contour.

Recently, in company with Mr. P. Kenyon, I examined some crags about a mile to the south of the cairn on the summit of Whernside, and I was surprised to find that *Silene maritima* With. was growing there in plenty. These crags are grit cliffs at 1,825 ft. O.D., and Lees' 'mural limestone scars' needs amending. It looks as if Windsor's Whernside record was correct and that no botanist has visited this cliff recently. On the grit scree at the foot of the cliff the Parsley fern, *Cryptogramme crispa* Br., was growing plentifully; this fern is abundant on the slate-rock debris in the Sedbergh-Howgill area but I have never seen it previously in quantity on the grits. In Lees' it is given 'On Ingleborough little hill (!) plentiful,' and I have spoken with persons who state that this was the case thirty or forty years ago, but that it has almost disappeared in this place now, and the same information applies to another grit crag area, Knott Coppy, south of the L.M.S. railway at Eldroth between Giggleswick and Clapham stations. In this habitat there is evidence that it was taken by fern collectors for sale. The 'Ingleborough little hill' is about three-quarters of a mile south of the cairn and about 2,000 ft. O.D. Knott Coppy is 600 ft. O.D. and is 1,000 ft. lower than Lees gives for its range in West Yorkshire.

FIELD NOTES

Pine Marten (*Mustela martes* L.) Near Huddersfield.

—On Thursday afternoon, November 19th, 1936, whilst walking through Highbridge Wood, Skelmanthorpe, I saw a strange-looking animal sat on a wall. Going quietly towards it with my field-glasses in hand, I got within six yards. It then began walking on top of the wall. The wall was low, so that I had a good view of it. Its body was about half a yard long, and its tail twelve or thirteen inches long and about two and a half inches wide. The latter looked flat as it was dragged along the wall, owing to the long fur. The body was darkish brown; white underneath from the front right up to the chin. The tail looked black, the ears long, and the face pointed. In my excitement I said aloud, 'It's a Marten.' It heard me, and leapt into the wood, alighting on a small shrub; then it gave an extra leap of four or five yards up on to a bough of a large tree, where I had ample opportunity of observing with my field-glasses at a distance of not more than six or eight yards. Yes, it was undoubtedly a Pine Marten. I remember one being shot in Cannon Hall Park (about two and a half miles away) in 1878.—FRED LAWTON, Skelmanthorpe.

[Although there is always a possibility of this rare British mammal being an escape from captivity, I have made all possible enquiries without any clue. One imported from Ireland escaped in the summer of 1934 in Duncombe Park; but Mr. Gordon believes that it was killed in that district a few months later. On the other hand, it is surprising how this rare English mammal keeps turning up in Yorkshire at lengthy intervals. Taking England and Wales there are probably hundreds of Polecats to every Pine Marten. Both are supposed to be great wanderers, yet I have not known a genuine Polecat in Yorkshire for thirty years. The last Pine Marten I remember in this neighbourhood was one in a trap in a state of decomposition in May, 1912, at Far Grave Farm, Hebden Bridge, and reported by Mr. W. Greaves. Its skull is now in the Cartwright Hall Museum, Bradford. (*The Naturalist*, 1912, p. 226.)—H.B.B.]

Manx Shearwater Flying Overland.—On September 1st, 1935, Mr. Adam Gordon, head gamekeeper at Duncombe Park, Helmsley, showed me the skin of a Manx Shearwater (a ♀ by dissection) that he had picked up in a dying condition on the ground during the great fire (mostly underground peat) on Bransdale Moor in August, 1935. This fire smouldered for several weeks, and dense smoke rose to a great height over a large area. Fortunately for those fighting the fire (including some troops) there was very little wind at the time. The feathers of the underside of this bird were singed and Mr. Gordon said that its eyes were badly inflamed. The bird had evidently continued its desired course (possibly at night)

until it encountered the dense smoke, when it became dazed, lost its bearings, and came to ground. The reason for the delay of this note is because at the time I understood from Mr. Gordon that someone else was sending a report to *The Naturalist*. But in view of the fact that recently several 'homing' experiments have been made with Shearwaters, I think this note of value, as showing that Shearwaters do voluntarily cross overland in fine, calm weather.—H. B. BOOTH.

THE GEOLOGY OF LEEDS AND DISTRICT

(Transactions of the Leeds Geological Association, Vol V., Part 3 for 1934-35.)

THE recent publication (December, 1936) of the biennial *Transactions* of the Leeds Geological Association, one of the oldest of our affiliated societies continues the presentation of papers on the geology of Leeds and district, many of which are of general interest. Past numbers have contained a series of papers on the well-known sections of coal measures exposed in Robin Hood Quarry near Wakefield, dealing with the succession and fauna. This is continued in the new part by a paper by Mr. T. Deans, in which he describes the petrology of an oolitic ironstone, the presence of which was not previously recognised. The author gives chemical analyses and the calculated mineral composition of this ironstone and discusses its mode of origin in the swamps of the coal measures. This exhaustive paper is completed by twelve photomicrographs of the ironstone.

The millstone grit succession north of Leeds had never been satisfactorily determined until the recent work by the Geological Survey. This has been arrived at by means of goniatites, marine cephalopods usually occurring in thin bands in the shales between the massive beds of deltaic Millstone Grit. This method of investigation, the only way by which the many grits may be correlated over wide areas, was made possible by a past President of the Y.N.U. and of Leeds Geological Association, Mr. W. S. Bisat. In the recent *Transactions* a paper by Mr. W. N. Edwards, a member of the Geological Survey, combines the result of this investigation with the succession passed through in a borehole at Yeadon.

The upper part of the Millstone Grit is partially exposed north of Leeds at Roundhay and near Moortown, and a paper by Mr. F. C. Slinger details the succession and the fauna of these beds, especially those exposed in the gorge in Roundhay Park. In these sections he records not only marine goniatites and lamellibranchs characteristic of Millstone Grit sedimentation, but also the occurrence of several bands of freshwater lamellibranchs (*Carbonicolæ*), typical of the sedimentation of the succeeding coal measures. These two papers complete the Millstone Grit succession north of Leeds, the lower part of which as seen south of Harrogate was published in a previous part by Dr. R. G. S. Hudson.

In a contribution of interest Mr. J. A. Butterfield carries further his investigations into the heavy minerals of the Millstone Grit, and records the occurrence previously unknown of the mineral anatase (var. octahedrite) from the Upper Kinderscout Grit at Hebden Bridge, and discusses its origin.

Two further smaller papers deal with the base of the Permian and the structural significance of the Rossendale Anticline.

The Leeds Geological Association is to be congratulated on this successful continuation of its *Transactions*, both in the matter published, all of which is by members of the Association, and particularly in view of the very limited financial resources at the disposal of such a small society.

REVIEWS AND BOOK NOTICES

Wild Visitors to a Cotswold Garden, by **Ernest C. Harris**, pp. 155, with 30 photographic illustrations. Country Life, 8/6. Those who would study wild life and are fortunate enough to have a country cottage to live in or to visit at frequent intervals, need not go far from the front door for inspiration. The bird-watcher need not be a very active man. Much may be seen from an armchair placed in a suitable window. Mr. Harris was compelled through ill-health, to retire, at a comparatively early age to the Cotswold home of his parents. Being a student and lover of nature he has been able to make great use of an enforced idleness and has written a charming book of his experiences among the haunts of his childhood. As might be expected, the birds of the garden come in for a good share of the book, but there are delightful chapters on fishing and boating, and on bird and animal watching from a hide. The pictures are a credit to the writer and are a great help to the text.

Aquariums and Fish Ponds, by **A. Laurence Wells**, pp. viii+64, with frontispiece and 39 illustrations in the text. Warne, 1/6. This useful little book will give the intending aquarist all the information he needs to make a good start in a fascinating and comparatively inexpensive hobby. The author gives much detail on the actual setting up of aquariums and ponds, and his advice is very sound. Lists of suitable plants are given along with exact directions for successful planting. There are descriptions of the different kinds of fish which may be safely introduced and there is a chapter on ailments of fishes.

Birds of the Wayside and Woodland, based upon Coward's **The Birds of the British Isles**, edited and with introductory chapters by **Enid Blyton**, with 300 accurately coloured illustrations, 8 photographic reproductions and 52 text figures, pp. 352. Warne, 7/6. One of the most readable and accurate works on British birds published during the present century is Coward's well-known three-volume work in Messrs. Warne's Wayside and Woodland Series. The book under review is, to all intents and purposes, a one-volume edition of Coward, and the difficult work of cutting, condensing and editing the writings of an acknowledged expert who was never verbose, has been done exceedingly well. Reading an account of any common bird in Miss Blyton's edition makes one wonder how three volumes have been crowded into one. The method is a simple and most reasonable one. Really rare birds are given a line or two apiece containing enough description of plumage, etc., to bring out distinctive points. Miss Blyton's own chapters on Eggs, Nests, Feet and Footprints, Beaks, and Making Friends with the Birds are valuable additions to the volume. The coloured illustrations are reduced copies of nearly all those appearing in the three-volume edition and are remarkable for their accuracy and beauty.

Wild Nature's Day, by **Frances Pitt**, pp. 200, with 36 of the author's own photographs. Pitman, 3/6. It is always good to get a book from one who writes entirely from direct experience. Miss Pitt's writings are very well known, and this volume is well up to her best standard. Very few people could give an accurate and detailed account of the doings of even the commonest wild creature throughout the length of a day, and how many good naturalists know where the crowds of birds of the daytime spend their hours for sleep? In *Wild Nature's Day* the author has divided up her book into three parts. The first deals with 'Morning,' with the dawn activities of wild creatures, and the search for breakfast. Then comes part two, 'Noon,' a time of great activity for most creatures, and finally part three, 'Night,' with chapters on 'How the Birds and Beasts go to Bed,' 'When Night has Come,' 'The Creatures of the Night,' and 'Joyful Night.' Not only does Miss Pitt

always know what she is talking about, but her descriptions are vivid, convincing and entertaining in the best sense. The illustrations which are from the author's own photographs, are excellent.

NEWS FROM THE MAGAZINES

The Entomologist's Monthly Magazine for December contains 'A preliminary list of the Coleoptera of Windsor Forest,' by H. Donisthorpe; '*Adelocera quercea* Herbst. (Col. Elateridae) established as British,' by A. A. Allen (Windsor Forest in decayed trunk of oak); '*Leptacinus intermedius* N. sp. (Col. Staphylinidae), a beetle new to science,' by H. Donisthorpe (with plate. Some thirty specimens in a haystack bottom in Windsor Forest); 'A new species of the genus *Physatocheila* Fieb. (Heteroptera: Tingitidae) from Dorsetshire,' by W. E. China (Witchampton, numerous specimens on old lichen-covered maples, P. Harwood); '*Conocephalus fuscus* Fab., a grasshopper new to Britain,' by K. G. Blair (in reeds, Chale, I. of Wight); 'The Ethiopian species of the *fasciata* group of the genus *Bactria* (= *Promachus*) (Diptera, Asilidae),' by B. M. Hobby, and several shorter notes.

The Entomologist's Record for December contains 'Notes on *Cucullia gnaphalii*,' by A. J. Wightman; '*Polyommatus pyrameleager*, another "blue" from Persia,' by R. Verity; '*Caloptenus italicus* L. in England,' by M. Burr (a solitary female on Ballard Down in Dorsetshire in 1933 by J. D. Cowper); 'Cornish Notes, 1936,' by C. Nicholson; Notes on Collecting, etc.; and supplements 'The British Noctuae and their Varieties,' by H. J. Turner and 'Butterfly Races of Macedonia,' by R. Verity.

The Entomologist for January contains 'Rhopalocera on the Island of Scalpay, with an account of the occurrence of *Nymphalis io* on Raasay,' by J. W. H. Harrison; 'Migration Records, 1936,' by Capt. T. Dannreuther (*Herse convolvuli*, a worn female at Penrith in October; *Plusia gamma*, new brood abounded in Northumberland and Durham from August 26th to October 6th, and larvæ attacking cabbage in the beginning of September; *Nomophila noctuella* in the Isle of Man in September; *Heliothis peltigera*, Douglas, Isle of Man; *Nymphalis antiopa* at Birtley; *Celerio galii*, West Hartlepool); 'On the Incorrect Determination of British Trichoptera (Caddis-flies) from the Larvæ,' by M. E. Mosely; 'Dragonflies in 1935,' by H. G. Attlee; 'Indo-Australian Hesperiidæ: descriptions of new genera, species and sub-species,' by Brig. W. H. Evans; and Notes and Observations.

The Entomologist's Monthly Magazine for January contains 'Notes on the Feeding Habits, etc., of some of the British Haliplidæ,' by Rev. E. J. Pearce; 'Descriptions of New Brazilian Dryopidæ and Distributional Records of others,' by H. E. Hinton; 'A new British Mason Wasp,' by H. P. Jones (*Microdynerus exilis* H.S. from Botley near Southampton); 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; and several shorter notes, including two notes on *Carpophilus sexpustulatus* in Yorkshire, and additional British localities for *Sigara castanea* Thoms.

Sands, Clays and Minerals is a magazine devoted to Economic Minerals and is edited and published by A. L. Curtis, Chatteris, Cambridgeshire. Vol III, No. 1, is to hand and contains a large number of interesting, well-illustrated articles. Among these are 'Pure Silica Sand as a basis for phosphate deficiency test on lettuce,' by Dr. R. M. Woodman, of the Cambridge Horticultural Research Station; 'Soils,' by Professor G. W. Robinson; 'Industrial Water Supply,' by Professor Edgar Morton; 'The Barytes deposits of Greece,' by G. J. Siotis; 'Use of Fire Cement in Industry'; 'Mining and Mineral Resources of Tanganyika Territory,' by Sir Edmund Teale. The price of the Journal is only 3/6.

THE YORKSHIRE NATURALISTS' UNION'S SEVENTY-FIFTH ANNUAL REPORT FOR 1936

(Continued from page 24)

WILD BIRDS AND EGGS PROTECTION COMMITTEE

List of Subscribers, 1936

	£	s.	d.		£	s.	d.
Ald. A. Hirst ...	5	0	0	Yorkshire Naturalists' Union ...	0	10	0
W. MacMillan ...	2	0	0	Capt. S. E. Evans ...	0	10	0
Miss Waterhouse ...	1	10	0	V. G. F. Zimmerman...	0	10	0
R. Cattley ...	1	1	0	R. Butterfield (1936 and 1937) ...	0	10	0
T. Waddington ...	1	1	0	B. Linney ...	0	7	6
A. B. Ward ...	1	1	0	A. W. Bradbury ...	0	5	0
J. Atkinson ...	1	1	0	J. Digby Firth...	0	5	0
York Field Nat. Society	1	0	0	Mrs. E. Cox ...	0	5	0
Sir Harry Smith ...	1	0	0	T. N. Roberts ...	0	5	0
Major Dent ...	1	0	0	H. Wood ...	0	5	0
L. Brigg ...	1	0	0	J. H. Rowntree ...	0	5	0
F. H. Edmondson ...	1	0	0	Scarborough Field Nat. Society ...	0	5	0
W. W. Nicholas ...	1	0	0	Nurse K. Sprague ...	0	5	0
R. Chislett ...	0	10	6	Mrs. A. Stell ...	0	5	0
C. W. Mason ...	0	10	6	W. F. Fearnley ...	0	5	0
H. J. Behrens ...	0	10	6	W. Greaves ...	0	5	0
The Misses Samman ...	0	10	6	T. Stainforth ...	0	5	0
E. W. Taylor ...	0	10	6	W. E. L. Wattam ...	0	5	0
C. F. Proctor ...	0	10	6	A. Wood ...	0	2	6
E. B. Gibson ...	0	10	6	A. E. Greaves ...	0	2	6
W. J. Forrest ...	0	10	0	Miss A. Cherry ...	0	2	6
S. H. Smith ...	0	10	0	O. Darneley ...	0	2	6
J. J. Briggs ...	0	10	0	T. H. Dick ...	0	2	6
A. Jordan ...	0	10	0	R. Coggrave ...	0	2	6
W. J. Clarke ...	0	10	0	Mrs. E. M. Morehouse...	0	2	6
T. Petch ...	0	10	0	Rev. W. L. Schroeder...	0	2	6
H. Wood ...	0	10	0	P. W. Allday ...	0	2	6
W. G. Birch ...	0	10	0				
A. R. Cleminson ...	0	10	0				
Mrs. J. S. Binns ...	0	10	0				
Miss K. P. Yeoman ...	0	10	0				
T. Sheppard ...	0	10	0				
Miss C. Edmondson ...	0	10	0				
Norman R. Newsholme	0	10	0				
					£37	2	6

Final Balance Sheet

INCOME.	£	s.	d.	EXPENDITURE.	£	s.	d.
Subscriptions as per list	37	2	6	Watchers and Insurance	23	7	6
Balance from last year	34	18	3	Printing and stationery	1	2	9
				Postages ...	1	6	6
					25	16	9
				Balance in hand ...	46	4	0
	£72	0	9		£72	0	9

East Riding Area under Protection and Observation (C. F. Procter): The season generally has not been so good as last year. We started watching at Hornsea Mere on 18th May. There was a considerable increase in the nests at the heronry. Thirty-three nests seem to have got a fair clutch each, but I do not think that the Herons are affected by the seasonal conditions of the birds which nest later. The Herons are the earliest nesters of any as a general rule. The fact that Ducks

are sometimes erratic and begin nesting about the same time does not break the rule.

I noticed an interesting incident where a Heron had strangled itself by being caught in the horizontal fork of a long slanting twig.

The Grebes have not made a good show this time. There were about 18 pairs with fairly well recognised beats, but the family parties were small and far between. There were six lots of young, comprising altogether about 20. Unless there were more than these, 20 would not make good the gaps that occur in the ordinary course of nature. The watcher reports that he has twice seen young Grebes dive out of the family party in the neighbourhood of good pike ground, and fail to appear and that eventually the family party swam away one short after a lapse of half an hour.

About 60 swans have taken up residence this year, but most of them are sterile birds. Only four pairs nested. They have brought off 16 cygnets.

Two Kingfishers brought off clutches, but the Finches and small birds found the cold and wet time against them. There seems to be an increase of Woodpeckers. There were several pairs about and there were many instances of their handiwork, or should we more properly call it industry?

The Ducks generally and Snipe have done well. I have had a record of three Pintail being shot inland that were very immature and almost certainly have been nesting in Holderness. A buff-backed Heron was observed on the coast for several days. I have not heard of it being killed so I think it has gone away.

At Spurn we have every reason to believe that our protection is meeting with a very gratifying response. At Kilnsea 45 nests of the Lesser Terns, with a total of 126 eggs, and at Spurn 49, with a total of 133 eggs, brings the number to the record of 94 nests and 259 eggs, all of which enjoyed a good time.

Ringed Plover were also numerous, 21 at Kilnsea and 15 at Spurn, with a total of 136 eggs being marked. Only one Oyster Catcher on three eggs has been noticed, and this was at Kilnsea. They all got off and safely dispersed.

Other birds generally, especially game birds, had not too good a time. This is almost invariably the rule with a very wet season on heavy clay land such as that of Holderness.

It is of considerable interest to note the importance to bird life of the forces operating along the sea side of the Spurn Peninsula in the formation of the pebble beaches. Where these are available the Terns and Ringed Plovers invariably prefer them. When they are absent, the sand dunes, and occasionally even the dried mud with its naked surface, is utilised. Up to about eleven years ago the steady erosion of the seaward side was resisted by timber revetments tight up to the face of the low sandy cliff above normal high water mark. This was effective only so long as the tides remained normal, but as soon as a north-east gale coincided with a spring tide, the protection it afforded was not enough, and another slice was added to lost territory. Of major importance was the fact that whenever this occurred during June the entire colony was swept away and the second sittings had to be relied upon to provide the new stock. Sometimes these also met with disaster. At the same time the steady southward drift of the gravel maintained these beaches at the danger level. The engineers of the War Department next tried the experiment of building timbered lateral groynes ten feet or so high, at right angles to the cliff and out to sea. This was immediately effective. The gravel drifted only between the groynes until it filled them up on the north sides and sometimes overtopped them. The pebble beaches now piled themselves up well out of reach of any tide, whilst that peculiar action—a combination of wind and wave pressure acting on a gravel base in a waterlogged situation with its comparative specific gravity lessened by

half—still further forced up the higher gravel layers until now the nesting reaches are safe and comfortable. A further element in the birds' safety lies in the fact that the great increase in the numbers of visitors and the consequent publicity drove large numbers of them to seek sanctuary on the point itself below that frequented by holidaymakers and visitors and yet further protected by the intervening military station and the kind offices of the garrison commandant, himself a keen bird lover.

Thus do interrelated things happen and operate in manners quite impossible to predict and yet often quite simply understandable after the event. Most of the factors quoted above were arbitrary with, of course, the important exception of the mental attitude of the colony to too much publicity.

MAMMALS, AMPHIBIANS, REPTILES AND FISHES COMMITTEE

Mammals (W. G. Bramley) :—So far as can be gathered, there is no great change in the status of our common mammals. Long-tailed Field Mice appear to be more numerous in my own district. Only two Grey Squirrels have been noted in Upper Wharfedale. The following dead mammals were found during September in a catch water at Blackstone Edge (1,250 ft. O.D.) by Mr. V. S. Crapnell: two Lesser Shrews, two Common Shrews, two Field Voles, one Long-tailed Field Mouse, and one Weasel.

Reptiles.—Miss Galwey, in May, found three British Grass Snakes in a marshy field near Fixby golf course near Huddersfield. Although at one time common in the district, they are now nearly extinct. One is now at the Tolson Memorial Museum alive and the other two were left in the hope that they may carry on the race.

In August two young Grass Snakes were found in the town itself but were both of the Italian variety and had evidently been imported.

Amphibia.—Mr. M. Longbottom reports that about 150 newts were caught in a pond near Dowley Gap Saw Mills, Bingley, from 19th-21st June, 1936. The estimated proportion was three Smooth Newts to one Palmated Newt.

York District (S. H. Smith) :—MAMMALS.—There is nothing of importance to record under this heading as all the usual species in the York district have been observed. On 14th March two Otters in the River Foss at Huntington offered an opportunity for a number of the villagers with sticks and dogs to stage an impromptu hunt. The Otters appeared to enter into the spirit of the hunt and eventually they escaped apparently without injury. Throughout the year they and, perhaps, some of their progeny have been in evidence, and so far they are still at large. Several times they have visited the pond in my garden at Heworth and successfully cleared out most of the trout. A bitch Otter of 16 lbs. was killed by hounds in the River Rye at Butterwick on 11th May.

I have not seen a Red Squirrel near York during the year, but the Grey variety is extremely common.

On 24th September I saw a Stoat in my garden, and using a clump of antirrhinums as a cover base, it was making short dashes after sparrows that were picking up new-sown lawn (grass) seeds. The sparrows were fascinated by the efforts of the sharp little fellow, but always flew out of reach as the Stoat dashed at them. The game had every appearance of affording real fun to the sparrows, but ended quickly when a slight movement on the part of one of the human observers behind the window caused the Stoat to slip away into deeper cover.

Bats were fairly numerous during September, and I noticed Pipistrelle, Long-eared Bats, Noctule, and other species were flying but not identified.

April brought out a goodly number of Hedgehogs and also Short-tailed Field Voles, and Long-tailed Field Mice. My traps accounted for

about 40 Brown Rats, which are attracted by the water and swim so freely as to entirely drive away the comparatively harmless Water Voles.

PISCES.—A Salmon of 42 lbs. weight was netted at Moreby, River Ouse, by R. Kendall, Ryther, on 20th April. There was a good run of fish on this date and three boats had 24 with an average of 20 lbs. per fish. There was a good migration of Smolts at this period, and on 23rd April Inspector Hargreaves, of the Yorkshire Fishery Board, netted 40 at Moreby during high water, all being duly released again.

On 28th April I found a Salmon Smolt trying to jump up the bank of my pond on the side nearest the river (which is a mile distant); this I put in when a 'parr' in October, 1935, and was one from ova of November, 1933, hatched at Keld Head in January to February, 1934. It had grown to 11 in. in length and weighed 6 oz., and had assumed silver 'sea-going scales.' I turned it into the Ouse at Lendal Bridge, York. Other Smolts in my pond and from the same batch had on 9th April reached 8 in. in length without artificial feeding; all died that were not caught up and placed in the river. Two more were measured, one on 31st May, 10½ in., and one on 1st June, 9½ in., both clean and silvery.

A fine Trout 4 lbs. 2 ozs. was caught in the Derwent at Stamford Bridge on 18th April.

AMPHIBIA.—On 23rd March occurred the annual movement of toads and frogs to their spawning ponds at Heworth. Each female with its male companion tightly clasped, they littered the road and footpaths in hundreds, particularly in the neighbourhood of electric light standards. I myself counted 350 pairs of both species one day. After spawning they leave the ponds and distribute themselves over local fields and gardens until the next migration period comes round.

I am indebted to Mr. V. G. F. Zimmermann for his help in supplying notes.

North Riding (W. J. Clarke):—**MAMMALS.**—There is little change to record in the status of the local mammals.

Seals have been present during the whole of the year, chiefly about the harbour at Scarborough, but also along the coast both north and south of the town. One, sometimes two, are nearly always to be seen at the harbour mouth. The fishermen do not interfere with them and one individual has become so tame that it follows the incoming cobbles begging for fish and will take them from the hand. All those seen have been the Common Seal. On 30th March, 1936, one of these Seals was seen to seize a swimming Kittiwake and kill it, but it did not eat the bird.

Red Squirrels still continue very scarce in the woods around Scarborough and the number seen during the year could be counted on one hand.

Grey Squirrels still continue numerous. During the year bills have been posted in the country districts urging the people to 'Kill those tree rats.' The farm lads have accepted the invitation and have revived the old pastime of 'Squirrelling' with catapults. Unfortunately they do not discriminate between the two species and Red Squirrels are being shot as well. On 9th June I examined the bag of a party who had killed seven Squirrels in Forge Valley. Two of them were Red Squirrels, the only pair I knew of inhabiting that part of our local woods. This persecution does not seem to have the slightest effect in reducing the Grey population, which is as numerous as ever.

The Raccoon, widely reported in the Press as being trapped at Muston on 5th March, 1936, was probably one which had escaped shortly before from Wykeham Abbey.

Black Rats still persist about the piers and shipping in the harbour, in spite of continual trapping and poisoning. Possibly their numbers are maintained by importation brought by the Dutch herring fleet, which fishes from here every autumn; 71 examples have been trapped during the period between 2nd December, 1935, to 15th October, 1936. During

the same time only five Brown Rats have been killed in the same district.

Field Voles and Water Voles have not been seen in their usual numbers. Otters, Badgers, and Foxes maintain their status in the district.

A Lesser Rorqual Whale, 28 ft. in length and 19 ft. in girth, was stranded at Saltwick, just south of Whitby, on 12th May, 1936. It was cut up and buried, samples of the baleen being sent to the South Kensington Museum for identification.

With the exception of a few Common Porpoises no other cetaceans have been recorded.

MARINE FISHES.—Red Mullet have been scarce throughout the year, two were seen on the Scarborough Fish Market on 29th October, 1935, and one on 17th February, 1936. They had been taken in the trawl near Scarborough.

Pelamid. A specimen weighing $8\frac{1}{4}$ lb., 27 in. long was caught in the salmon nets in Filey Bay by J. W. Johnson on 15th June, 1936.

Tunnies were abundant during the summer, from within 9 miles off Scarborough to the Dogger Bank. The first were seen on 24th July, 26 miles from shore. 32 were caught off Scarborough on rod and line, and one was landed at Bridlington. Weights ranged from 394 lb. to 731 lb.

An hermaphrodite Cod was trawled off Scarborough on 3rd January, 1936.

A Power Cod, 5 in. in length, was caught on 20th August, 1936, from the pier at Whitby and has been preserved in the Museum there.

A Mullers Topknot was trawled near Scarborough on 22nd October, 1935.

A Garfish caught in the bathing pool at Scarborough on 12th April was an early date for this species, which is not usually seen until about August.

Two Pilchards were landed among Herrings on 14th September at Scarborough.

Twaite Shads occurred in some numbers during February, 1936. One was trawled on 10th February; one taken from the stomach of a Cod caught at Scarborough on 11th February; one trawled 12th February; 24 trawled by one boat 15th February; eight trawled on 17th February; three trawled on 20th February; and one trawled on 9th March; all near Scarborough. Two were also caught from Whitby pier by anglers, taking herring bait. All were from 12 in. to 16 in. in length.

A single Allis Shad was trawled near Scarborough on 17th February, 1936.

Three small Sturgeon were taken near Scarborough from 4 ft. to 5 ft. in length. Two were trawled, the other was caught on a hook baited with a Dahlia Anemone.

A Short Sunfish, 5 ft. 1 in. from tip to tip of dorsal and anal fin, 3 ft. 10 in. long, was washed ashore, dead but fresh, at Filey on 30th December, 1935.

Porbeagle Sharks were very numerous off the coast during the summer months. One caught on rod and line weighed 101 lb.

A Basking Shark in poor condition was gaffed from a cobble in Filey Bay on 23rd September, 1936. It measured 11 ft. in length and was suffering from an old injury to the head.

CONCHOLOGICAL SECTION

Conchology (Mrs. E. M. Morehouse): This year there have been few outstanding records, many habitats visited regularly by the writer during the past years, show this season a great scarcity of molluscs, in one particular case where one could have gathered hundreds of *Helix nemoralis* Linné, the present year the net result was three adults and six

juveniles. *Arianta arbustorum* Linné was entirely absent. Again *Helicella virgata* da Costa, which has not been seen for seven years, was again observed in a quarry at Little Smeaton, also *H. caperata* Montagu, another absentee, has been found in several places where it has not been seen for a long time. An old record for *H. virgata* da Costa on and around a certain outcrop of limestone in Broc-o-dale appeared last Autumn and again this Summer; it has apparently been non-existent the last twelve years. Through Mr. H. Britten I received *Testacella scutulum* Sow. It was sent to him by Mr. R. J. Flintoff and was found on the drive of his garden at Goathland. *T. scutulum* is always an interesting record.

Mr. J. Digby Firth was given a specimen of the very beautiful slug, *Arion ater* v. *alba* s.v. *occulata* from Cookridge. This animal was deep-cream with black tentacles and an orange foot; also Mr. H. J. Armstrong took *Arion ater* v. *brunnea* Roebuck in his garden at Cookridge.

Mr. A. Smith, York, writes: I got one of the men dredging sand from the river to get me some bivalves from the River Nidd. He brought me *Anadonta cygnæa* Linné and *Unio pictorum* Linné, they were plentiful and in a nice, clean condition. Another gentleman sent a quantity of *Anadonta cygnæa* Linné from the lake at Oulston, where the River Foss rises. These were in abundance, the largest measuring 5 in. long. A few surviving *Helicella itala* Linné still occur at Kirkham Abbey. *Arianta arbustorum* Linné were very plentiful, but *Helix hortensis* Müller is getting scarcer.

Last month (September) I saw large numbers of *H. hortensis* Müller, mostly of the *lutea* form, and *Arianta arbustorum* Linné in the lane from Coneysthorpe to Malton. *Helix nemoralis* v. *castanea* Moq. Tan. occurred in the grassy part of the wood at Buttercrambe. Both the yellow and pink forms of *H. nemoralis* v. *undulata*, *Gentiliuomo*, were seen on the Skirpenbeck Road, near Buttercrambe Bridge.

The Ponds at Askham Bogs were almost devoid of mollusca, the only molluscs I found were a few specimens of *Limnaea palustris* Müller. The overhanging vegetation is rapidly exterminating all the snail life so prominent a few years ago. Only one or two *L. stagnalis* Linné were seen in the pond where our best local specimens used to be taken. *Succinea putris* Linné were common. The only other species I saw were two miserable *Planorbis corneus* Linné, a few *P. contortus* Linné, and *Sphaerium corneum* Linné.

ENTOMOLOGICAL SECTION

The year's weather has had different effects on the various orders of insects. Lepidopterists appear to have found the year normal during the cold Spring and the drought of early Summer, but the wet period which commenced in late June made collecting less profitable. The immigratory species were few in number, and their second broods scarce. Other orders seem all to have been scarce throughout the year.

Hemiptera (J. M. Brown): The season of 1936 has not been quite so successful a one as was that of 1935. Hemiptera were late in making their appearance, and during the period of the year when usually most plentiful, many species even common ones, were distinctly scarce. During the August meeting of the Union several interesting species were obtained at Millington and at Kilnwick Percy, while at Allerthorpe two species not previously noted for the Common were taken, viz. *Stenodema levigatum* and *Thamnotettix cruentatus*, as reported in *The Naturalist*, October, 1936.

Visits to Robin Hood's Bay and Sandsend allowed a considerable amount of collecting to be done in the surrounding districts, and a good number of species were taken. These will be reported on later, but so far as the material has yet been worked out only one species new to the

county can be added, viz. the inconspicuous Homopteron, *Typhlocyba carri* Edw.

The most interesting species obtained during the season are :—

Piezodorus lituratus F. Robin Hood's Bay, 7/9/36 ; Aislaby, 11/9/36.

Pentatoma rufipes L. Robin Hood's Bay, 7/9/36 ; Mulgrave Woods, 12/9/36 ; Runswick, 15/9/36.

Elasmostethus interstinctus L. Sandsend, 11/9/36 ; Ecclesall Woods (Sheffield), 7/10/36.

Temnostethus pusillus H.S. Sandsend, 11/9/36 ; Sleights, 18/9/36.

Microphya elegantula Bær. Sandsend, 13/9/36.

Megalocera linearis Fall. Millington, 1/8/36 ; Kilnwick Percy, 3/8/36.

Pantilius tunicatus F. Fylinghall, 10/9/36.

Campyloneura virgula H.S. Robin Hood's Bay, 7/9/36 ; Kilnwick Percy, 3/8/36.

**Orthotylus nassatus* F. Fylinghall, 8/9/36.

Heterotoma merioptera Scop. Kilnwick Percy, 2/8/36.

Malacocoris chlorizans Fall. Robin Hood's Bay, 7/9/36 ; Mulgrave Woods, 12/9/36 ; Runswick, 15/9/36.

†*Typhlocyba carri* Edw. Fylinghall, 10/9/36.

Thamnotettix cruentatus Panz. Allerthorpe, 2/8/36.

Eupelix cuspidata Fab. Ramsdale, 24/9/36.

Bythoscopus microcephalus H.S. Millington, 1/8/36.

Idiocerus adustus H.S. Kilnwick Percy, 3/8/36.

and the Coccid, *Newsteadia floccosa* (DeG.) occurred in Ecclesall Woods under fallen leaves, 18/3/36.

Neuroptera (J. M. Brown) : So far as I can judge from my own experience, Neuroptera have not been at all plentiful during the year. *Osmylus fulvicephalus* (Scop.) has again been seen in Ecclesall Woods (Sheffield), where larvæ were also taken during March. **Symphorobius elegans* (Steph.) and **Chrysopa carnea* Steph. occurred among specimens sent in by Mr. H. Britten, taken in Mulgrave Woods (3/8/36) and at Whitby (5/4/36) respectively. *Nathanica capitata* (Fabr.) was captured near Fylinghall (30/6/36) by the recorder.

A general list of Yorkshire Neuroptera is in preparation and will appear in *The Naturalist* shortly.

Psocoptera (J. M. Brown) : A paper on the 'Yorkshire Psocoptera' appeared in the June number of *The Naturalist*, giving the county records up to that date. Since then a good number of species have been taken, and additional localities have been noted for some of the less well-known species.

Metylophorus (*Psocus*) *nebulosus* (Steph.). Fylinghall, 14/9/36 ; Arncliffe Woods, 10/9/36.

Psococera (*Ps.*) *gibbosa* (Sulz.). Arncliffe Woods, 10/9/36.

**Trichadenotecnum sex-punctatum* (L.). Sleights, 18/9/36.

Reuterella helvimacula End. Robin Hood's Bay, 14/9/36 ; Arncliffe Woods, 17/9/36 ; Sandsend, 13/9/36.

**Lachesilla pedicularia* (L.). Sandsend, 20/9/36.

Ectopsocus briggsi (Mc. L.). Mulgrave Woods, 23/9/36.

**Hyperetes guestfalicus* Kbe. Fylinghall, 14/9/36 ; Sandsend, 13/9/36 ; Arncliffe Woods, 17/9/36.

Plecoptera (J. M. Brown) : There is nothing of special interest to report.

Ephemeroptera (John R. Dibb) : The number of May-flies appears to be below average during 1936. It will be remembered that during recent years when there have been long periods of drought the numbers of May-flies were apparently little affected. It is suggested as a possible explanation that during those years when the rivers, streams, and ponds

* New to V.C. 62.

† New to the county.

are much lowered by lack of rainfall, and the upper reaches of the former become dried up then one of the greatest enemies of the May-flies, the fishes, are unable to use to the full their hunting grounds and the prey is thus afforded added protection. On the other hand, the concentration of nymphs in small shallows and pools will add to the competition for their food material and will increase their mortality. The combination of these two effects might thus produce an even balance regarding the average quantities of the May-flies over both normal and extra dry years.

The present year, however, might be placed in a different category regarding its effect upon the numbers of May-flies, for there has been a more even rainfall distributed over the summer months, the effect of which must have kept the level of rivers and streams higher than normal for those months. Applying part of the above theory regarding the activity of fishes, their scope for obtaining food is widened and a reduced number of May-flies than the average may survive during such years when the summers are exceptionally wet.

Records sent in have been few, there are no new county records. I have to thank several Union members for notes, more particularly W. D. Hincks, J. Wood, and J. M. Brown, the last-named has reported in *The Naturalist* the species noted on various Y.N.U. excursions during the year, and of special interest is his note in the *Entomologists' Monthly Magazine*, which appeared just after our Annual Meeting last year. In this he records nymphs of the rare *Ameletus inopinatus* Etn. from the Aire, Malham. It will be remembered that the first and only other record of this species in Yorkshire was an adult ♂ taken by him in the same locality in 1931. He also includes new vice-county records of *Cleon dipterum* and *Baetis rhodani* from Allertorpe Common, August, 1936. W. D. Hincks notes in *The Naturalist* the species taken at the Sectional Meeting at Aberford in May. *Ecdyonurus forcipula* Pict. (?), which has been referred to as a probable addition to the British May-flies, but has only been taken in the nymphal state, was again taken this year by the writer at a new locality, Wharfe, East Keswick, on 12th August, as a nymph in a late instar.

Coleoptera (W. J. Fordham) : The year 1936 has not been a very good one for beetles, yet several additions have been made to the county list. Coleoptera were taken on the Y.N.U. excursions to Hawes, Aberford, and Hackness, lists of which are given in *The Naturalist*. Several articles have been published in *The Naturalist* during the year. Of the additions to the list, Mr. Britten adds the following from the Whitby district. *Crataeræ suturalis* Mann., *Atheta reperta* Shp., *A. hybrida* Shp., *A. hypnorum* Kies., *Clambus punctulum* Beck., *Atomaria atra* Host., and *Dryops anglicanus* Edw. The Rev. E. J. Pearce adds *Haliplus nomax* Br. from the River Wharfe near Harewood, and Mr. W. D. Hincks adds *Magdalis cerasi* L. from Allertorpe. Of species already in the Yorkshire list. Mr. Bayford adds another locality near Barnsley for *Carphophilus sexpustulatus* F., Mr. Barnes took *Agrilus laticornis* Ill. near Strensall, *Orchesia undulata* Kr. near Kilburn, and *Eccoptyogaster mali* Bechst. from Etton Fell, Helmsley, Mr. Stainforth records *Panagaeus quadripustulatus* Stm. from Spurn, and Mr. Dibb reports *Scymnus rubromaculatus* Goege. from Roundhay Park. Mr. G. B. Walsh has taken numerous ant nest beetles with *Formica rufa* at Riccaldale, all being on record for the Scarborough district. A full account will be published later in *The Naturalist*.

Dr. Fordham and Mr. Walsh, in a paper published in *The Naturalist*, 1935, pp. 165-7, add *Atheta hygrobia*, *A. laticeps*, *A. graminicola* var. *brunneipennis*, *Aclypea undata* and *Cryptocephalus pusillus* ab. *Marshami* to the Yorkshire list, together with a number of new vice-county records.

Diptera (Chris. A. Cheetham) : Diptera have been a disappointment to the collector this year, but with the weather we have had this was to

be expected. The common species generally appeared in reduced numbers until autumn when some of those with water or at least damp-loving larvæ were present in normal numbers. Curiously two species, one a Hoverfly, *Syrphus balteatus* Deg., the other a Tachinid, *Oliveria lateralis* F. have appeared in far more than normal numbers. This was noted at the Hackness and Pocklington meetings and in several places in the Grange-over-Sands district. On 2nd May I found *Tipula macrocera* Zett. on a small marshy area at the head of Gordale Beck, the females were ovipositing in tufts of moss; this extends the range of this newly-recorded Yorkshire species. I also found it fairly plentiful at the head of Great Blake Ghyll on Whernside where it was accompanied by *Tipula alpium* Bergr. This station is in V.C. 65. Another addition to this vice-county was *Phalacrocer replicata* L. from Wether Fell at Whitsuntide. Dr. W. H. Pearsall brought specimens of *Tipula excisa* Schum. from Ingleborough summit, 6th July, where he found this species very plentiful. Personally I never saw the species this year so it is evident that it has a short season. A pleasing addition to our list is the Asilid, *Machimus atricapillus* Fln. taken on the Pocklington excursion. Two other species of considerable interest were taken at this meeting, *Pæcilobothrus nobilitatus* L., a Dolichopod that we only had a single record of previously, and the same applies to *Opomyza florum* F. (the other, *O. germinationis* L. is commonly swept from grass).

Hymenoptera (Rosse Butterfield) : The season apparently has not been unfavourable in spite of easterly winds which prevailed until June, and the rather heavy rainfall in summer and early autumn. Evidently the previous sunny summers favoured the multiplication of wasps of the genus *Odynerus*, and the Fossores. The former had been comparatively low in numbers for some years.

Mr. John Wood has secured an interesting lot of Aculeates from the Aberford district. The narrow Permian tract which runs roughly north to south through the county, with its many suitable and attractive wild flowers, on which Aberford is situated, seems to be favourable for Aculeates, and there are species found on the tract which do not penetrate much further westwards. The soil and crumbly soft formation in some parts are suitable for the burrowers. Among the species from there are *Crabo scutellatus*, *C. chrysostomus*, *C. interruptus*, *C. cribrarius*, *Passalacus corniger*, *P. insignis*, *Mimesa unicolor*, *Arpactus mystaceus*, *Trypoxylon clavicerum*, and *Prosopis communis*. The *Anthophila* and others have not yet been overhauled.

The Entomological Section is indebted to Mr. Wood's indefatigable labours in securing a host of Ichneumons, Saw-flies, and other Hymenoptera from various districts in the county which are awaiting competent attention.

Mr. H. Britten, F.R.H.S., has submitted a list of Aculeates from the Whitby district, together with a list of Ichneumons, Saw-flies, etc. They were mostly collected last year, and a few species included in the lists have already been published in *The Naturalist*. A further list of this year's captures is forthcoming.

The President sends the following records of Ichneumons : *Pasiscus cephalotes*, Cudworth, near Barnsley, *Pimpla instigator*, caught settled on the window of a house in Barnsley.

Social wasps have not had a successful year. Comparatively few queens survived the cold Spring. Ground species were still busy until the end of September. The social bees have not been as prevalent as usual.

Lepidoptera (Rosse Butterfield) : Mr. R. G. Warren has paid attention to the Lepidopterous fauna in Upper Wharfedale, particularly Grass Wood, and in mid-Airedale and is to be congratulated on his activity. Of Micros. the following are reported :—*Eucosia tiniana*,

Hyponometa evonymella, *Lampronia praelatella*, *L. rubiella*, *Micropteryx thunbergella*, *Telphusa lucustella*, *Argyresthia conjugella*, and *A. sorbiella*.

It is interesting to learn that *Colocasia coryli* has survived in Grass Wood. The beech trees there have been recently felled, owing to a severe attack of the timber by the beech coccid. It was the intention to spare no trees, neither old nor young, but a few of the latter have escaped on which Mr. Warren found the larvæ of *coryli*. Some lepidoptera have become rare, or have disappeared, from the wood since the latter end of the nineteenth century. At that time the pretty day-flying *Pyræle*, *Ennychia octomaculatus*, was very common, and of the butterflies, *Erebia æthiops*=*blandina*, seems to have gone, as none apparently have been seen for about 11 years, whereas at the beginning of this century it was a common and welcome butterfly which reached its southern limit there. On the other hand, *Argynnis adippe*, a rare species in the north, has been seen on one or two occasions recently. The insect fauna is apt to change on account of new conditions, artificial or natural. Mr. Warren found *Hadena captiuncula* not uncommon in the upper wood. This, I believe, is its only Yorkshire habitat. At Riddlesden, near Keighley, *Procris statices*, a rare West Riding species, and one unexpected there, was found.

Our President (Mr. E. G. Bayford) reports that a fine specimen of *Charocampa elpenor* was brought to him. It had been found settled on a greenhouse at Barnsley, and also a nearly full-grown larva from Great Houghton, mid-way between Barnsley and Doncaster. It afterwards pupated, and is now in the hands of Mr. Hooper, Wakefield. A nearly full-grown larva of *Acronycta alni* was found in his garden by his daughter. An example of *elpenor* was brought to me, found near Keighley. I do not think the species has been recorded so far west in Yorkshire, and possibly the extension of range of this Hawk Moth may be accounted for by the wide colonisation of the rose-bay willow herb during recent years, on which the larva feeds.

It may be worthy of mention that a colony of the Six-spot Burnet has been established within a short distance of Keighley last year, and the year before. This may be a sequel of the two warm previous summers, and the colony may be temporary, as the species is not at home among the hills so far west.

Mr. J. Hooper has also seen a colony of this insect start in Coxley Valley in a place he has passed through regularly for years.

Our Secretary (C.A.C.) found the pearl-bordered Fritillary at Austwick Moss. West Riding records of the species are welcome and it would be interesting to know, as fully as possible, its present distribution and general status in all the three Ridings.

There does not seem to be any special migratory movements to report. Summer and early autumn proved rather grey and lowish temperatures. *Pyrameis atalanta* and *P. cardui* did not appear in numbers as during the two or three previous years. Mr. C. A. Cheetham saw at Austwick a few Red Admirals in September, and a single Painted Lady. I have missed the Humming-bird Hawk-moth in my garden this year, where for years in succession it visited flowers of Red Valerian, but three species of *Plusia* visited the bloom in great numbers. In late September the Small Wainscot was attracted to light in considerable numbers, and I noticed great blighted patches of grass on the moorland, due presumably to the activity of larvæ of Swift Moths at the roots.

Plant Galls Committee (W. P. Winter) : Mr. W. Falconer, who has done so much good work in connection with this Committee, has presented a Catalogue of the Galls of Yorkshire, compiled from various sources up to the end of 1935. This will enable us to form a comprehensive set of records. The Committee is once more much indebted to him.

Mr. Burkill sent a case of interesting galls with notes about them, and this proved of great value.

(To be continued).

The Naturalist.

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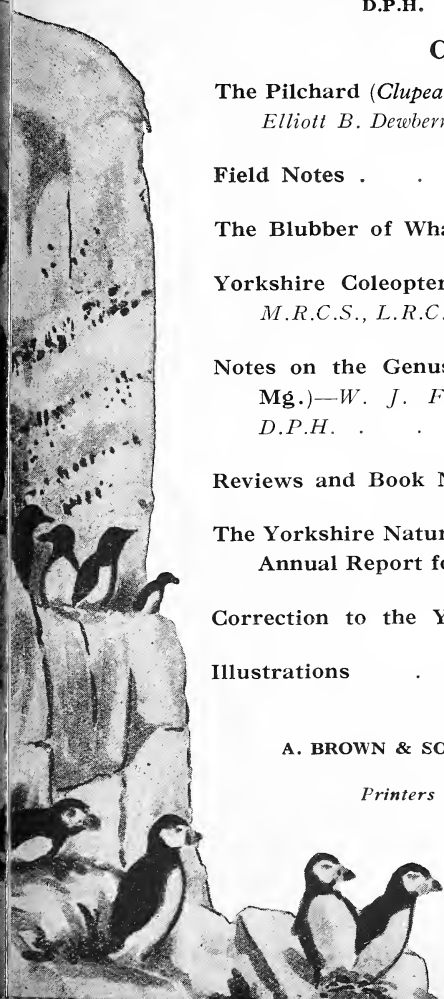
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THE PILCHARD (*Clupea pilchardus* LINN)

ELLIOTT B. DEWBERRY, M.R.I.P.H., M.R.SAN.I.

THE Pilchard, which is a member of the herring family and the most oceanic of any of the race, is to be found on the Atlantic coasts of France (*Clupea pilchardus sardinia*), Spain and Portugal and throughout the Mediterranean. In British seas it occurs off the coasts of Devon and Cornwall and the south and south-west coasts of Ireland, but towards the east end of the English Channel it becomes scarce.

A second species abounds off the coasts of Chili and Peru, the Pacific coast of the United States and lower California, as well as South Africa and Japan.

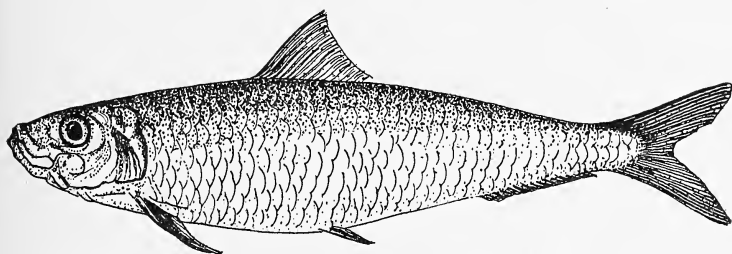


Fig. I.

The Pilchard (*Clupea pilchardus* Linn.)

A third species (*C. neopilchardus*) is found on the Southern half of Australia and in New Zealand.

HISTORICAL

History relates that the Pilchard fishing industry of Cornwall is of considerable antiquity and as early as 1588 regulations were made to try and ensure a satisfactory distribution of the fish and to prevent exportation. This legislation was necessary as the home markets were stimulated by the large number of national feast days on which it was forbidden to eat meat. Comparatively little preservation and curing, however, took place owing to the great scarcity of salt which, in later years, was imported from France. The flourishing conditions existing in the west country in the sixteenth, seventeenth and eighteenth centuries were doubtless largely due to the valuable monopoly of the Pilchard fishery, which was the mainstay and support of the inhabitants of that coast.

The Pilchards which Carew describes as being 'the least in bigness, the greatest for gain and most in number' formerly reached the shallow coastal waters between harvest and Alhallontyde. Their coming was eagerly awaited by

all classes of the population, as the large catches gave employment to men and women in cleaning, salting and pressing the fish. During the years 1747—1757 the total quantity of Pilchards dispatched from the four principal Cornish ports—Fowey, Falmouth, Penzance and St. Ives, averaged 30,000 hogsheads, or 90,000,000 of fish annually, but the industry was then, as now, subject to great fluctuations, both as regards prices and the quantity of fish caught.

Inshore 'seining' for Pilchards (sean or seine nets being the method in use for catching them) developed on a very large scale during the eighteenth century. Immense shoals reached the Scilly Isles and Cornwall in July and August and large numbers of fish were netted at Mevagissey, the creeks of Falmouth and Helford harbours, and in Mount's and St. Ives Bays; in 1877 the latter bay was the greatest seining centre in the country. The fish were cured with salt and exported to Italy. The season usually commenced in August and lasted until November or even December.

The earliest method of preservation was termed 'bulking.' The fish were tipped out from the 'gurries' (boxes with four-pole handles holding about 1,000 Pilchards) on to the ground. These were handed by children to the women who packed the Pilchards in alternate layers of coarse salt on the stone floor of the curing house until the bulk reached a height of five or six feet. The fish remained salted for about a month, the oil and the brine draining from the mass being carried off by gutters to a cistern. They were then washed, packed in hogsheads with their heads outwards with a 'rose' of fish in the centre to keep the level. Gradual pressure was then applied to omit the remaining oil until the contents of the cask had been reduced to one-third in bulk. The cask was thus filled thrice before pressing was finished. The oil was said to have been formerly used for lighting purposes or for dressing leather.

In later years a great change took place in the method of curing owing to the introduction of salting or curing tanks; 'bulking' was no longer carried out. The new process is said to have been first introduced at Mevagissey and it is a curious fact that not only did the Pilchards shortly afterwards desert the bay but as the use of the tanks became more general, the enormous shoals which formerly frequented the shallow waters of the Cornish coast were no longer to be seen. The last big catches by the seining method took place in St. Ives Bay in 1907.

During the Great War seining for Pilchards ceased entirely, probably owing to lack of man power; thus this particular branch of the ancient fishing industry practically became extinct. After the war the Pilchard industry still represented

an important section of the west country fisheries and in 1929 large catches were landed at the Cornish ports. The fish were caught in drift nets drawn by motor drifters at anything from 10 to 20 miles from the land. Each net is about 80 yards long and 30 to 40 yards in depth. As many as 20 to 30 of these are fastened together, forming a train, fleet, or

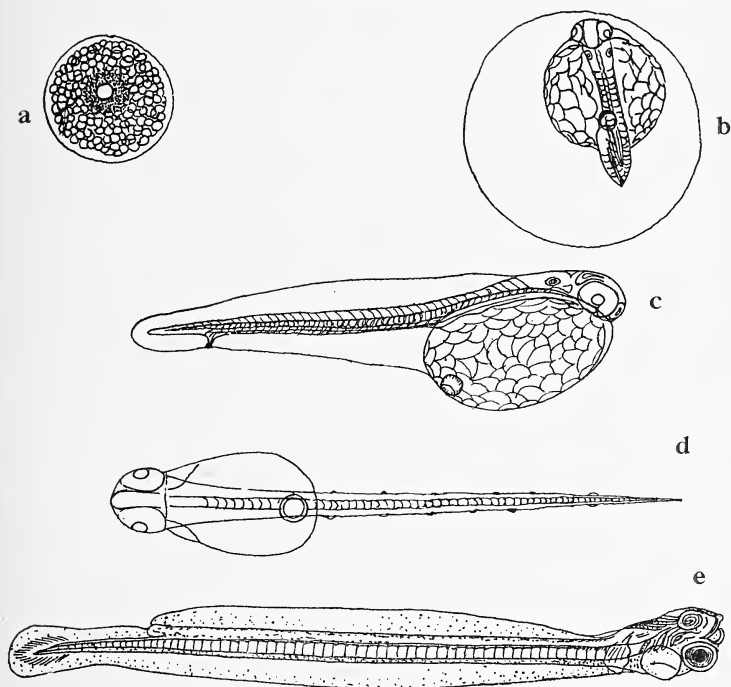


Fig. II.

- (a) Ova of ripe Pilchard.
- (b) Ova in advanced Stage of development.
- (c) Newly-hatched Larva.
- (d) Newly-hatched larva with ventral surface uppermost showing sensory papillæ.
- (e) Larva of Pilchard 9 days old (After Cunningham).

drift of nets, so that the whole may be a mile or more in length, hanging perpendicularly in the water like a wall of netting. The nets, after being cast or shot, are allowed to drift in whatever direction the tide may take them. As the fish come up with the tide their heads become entangled in the small meshes of the nets, from which they are not easily able to withdraw, owing to their gills which open and operate like barbs. A drifter usually shoots its nets shortly after sunset or just before sunrise and the vessel lies head-on to the nets until such time as a considerable quantity of fish

are found to be enmeshed. The nets are hauled in by a capstan and the catch shaken out. 10,000 fish is considered a good catch by one drifter.

Pilchard fishing now extends from Wolf Rock lighthouse, around Mount's Bay to the Lizard and along the south coast of Cornwall as far as the Eddystone. The season commences in June and lasts well into the autumn. During the height of the season the fish are extremely plentiful, although there may be sharp fluctuations in abundance from year to year. Unlike herrings, Pilchards are not captured in the breeding season, but when the generative organs are small and undeveloped the fish are fat and in prime condition.

Recently a stimulus has been given to the Cornwall Pilchard fishery by the introduction of up-to-date methods for curing and canning. The new industry is welcomed by the local fishermen and their families who have been passing through lean times. It is hoped that in the near future the ancient Cornish Pilchard fishery will regain some of its former importance.

LIFE HISTORY

CHIEF CHARACTERISTICS

The colour of the Pilchard when removed from the sea is olive green to greenish blue, with golden yellowish tints on the upper part of the body and silvery on the sides and belly. It is a soft-finned fish of the bony group of fishes, the length ranging from eight to eleven inches. A specimen of fourteen inches has been caught but this is a rarity.

The Pilchard is furnished with one dorsal, two pectoral, two pelvic and one anal-caudal fins, the dorsal fin being placed a little nearer the head than the tail. The slender body is rounder than that of the common herring and not so deep. The spines of the belly are short and weak and there is little or no lateral line. The head, which is slightly flattened at the top, is about one-fifth the length of the body and the large eyes are provided with double eyelids. The lower jaw is larger than the upper, the teeth being minute or even absent. Radiating lines are present on the yellowish tinged gill covers.

The scales, which at first show a lustrous golden colour, easily become detached if the fish is much handled. They are larger than in any other species of the herring family and are placed in pockets, the oblique rows being alternately large and small scales; the latter are concealed by the former in normal fish.

FOOD AND FEEDING

Pilchards feed almost exclusively upon plankton, *i.e.* minute vegetable and animal organisms floating or swimming

in the sea. In the spring the plankton contains enormous numbers of vegetable organisms, which in turn promote an increase in the number of pelagic animals such as copepods and other minute crustaceans. The adult fish feed continuously in the spring and early autumn, but from November to March feeding practically ceases.

NATURAL ENEMIES

Adult Pilchards have numerous enemies and are devoured by Dogfish, Hake, Tunny and other predatory fishes. Aquatic birds also take their toll of the larvae and small Pilchards, especially gulls, guillemots and gannets.

MIGRATION

Although at present little is known about the movements of Pilchards there is no doubt that shoaling and migration are primarily connected with the sexual function, the lesser movements, however, appear to be largely determined by the distribution of food and by currents. The adult fish approach the coasts of Cornwall from June to November, but retire to warmer regions as winter approaches.

BREEDING AND DEVELOPMENT

The minute globular, glossy, transparent eggs, each from 1.2 to 1.4 m.m. in diameter, are deposited by the female in clusters or masses numbering from 40,000 to 60,000. The egg has three distinct characteristics making it unlike any other in British waters:

1. The presence of a single large oil globule at the hinder end of the yolk.
2. A large space between the membrane and the yolk (termed the perivitellin space).
3. Complete division of the yolk into a number of irregularly shaped segments.

After fertilisation by the milt extruded by the male fish the eggs separate and float up to the surface of the sea, where development usually takes place rapidly. This, however, is dependent to some extent on the temperature and salinity of the water.

The newly-hatched, slender, transparent larva is about $\frac{1}{8}$ of an inch in length and has the unabsorbed yolk sac attached to the abdomen. The eyes are black and show slight yellow pigments, the gill slits are open but show no gill covers. The mouth is not at first apparent but on the third or fourth day the jaws develop and the yolk sac is absorbed. During this early period the larva is liable to be attacked by a host of enemies such as medusae, arrow worms and other predatory plankton organisms. On the fifth day the larva, which is

about $\frac{1}{5}$ of an inch long, begins to feed, but the scales and fins do not develop until a length of $1\frac{3}{8}$ to 2 inches is reached. the dorsal fin being at first placed well back, but as the young fish grows it assumes its proper position. About this period there is also growth and thickness of body and a silvery sheen appears on the skin. The rate of growth varies considerably and is determined by the temperature of the water and the nature and abundance of food. A length of 1.2 to 1.6 inches in March grows to 4.7 or 5 inches by December and at the end of a year it is 6 inches and in two years $7\frac{1}{4}$ inches. Pilchards $8\frac{1}{2}$ inches to $9\frac{3}{4}$ inches in length are about four years old. Spawning usually takes place at the age of three years.

Prolonged research has shown that the age of the Pilchard can be accurately determined by certain markings (zones and rings) on the scales, in much the same way as the annual rings in the trunk indicate the age of a tree.

FIELD NOTES

Great Crested Grebe near Middleham.—A male Great Crested Grebe appears to have taken up residence (February, 1937) on the River Yore, between Middleham and Danby, and can be seen almost any day on some portion of that stretch of river. It has been in the locality since November.—J. P. UTLEY.

Bitterns in North-East Yorkshire.—On December 20th, 1936, I was informed that an unknown bird had been found in the Scarborough Cemetery. On going to inspect the stranger I found a fine adult Bittern (*Botaurus s. stellaris* L.) alive, and very vigorous and aggressive. It had a slight wound in the carpal joint of the left wing which had not broken the bone but was sufficient to disable the bird temporarily. It looked like a shot wound, but might have been caused by striking some overhead wires close to where the bird was found. By the kindness of Mr. Clark, the Corporation head gardener, I was enabled to arrange for its conveyance to the Mere where it was placed on one of the islands which had no connection with the mainland, and where it was secure from enemies. Mr. T. N. Roberts took it food each day, and doubtless it would be able to catch some of the numerous small roach which abound in the water. The bird remained on the island until the night of December 24th-25th, when it disappeared and has not been seen since.

Mr. T. Hyde-Parker informs me that he has seen a preserved Bittern which was shot in a ghyll between Hunmanby and Reighton, about 1930. It was not possible to fix the exact date of its capture. This specimen does not seem to have been previously recorded.—W. J. CLARKE, F.Z.S.

THE BLUBBER OF WHALES

R. W. GRAY

As stated in a previous paper (*Nature*, 19th May, 1928) the blubber of whales is a tissue which seems to be worthy of consideration. It is usually said to be merely a non-conductor of heat, a fatty coat or jacket answering the same purposes as hair. Is this the case or does it serve some other purpose?

Unlike the blubber of seals, which is thick at one season and thin at another, that of whales—so far as I have observed—undergoes no changes except those which are incidental to age and growth. A tissue so constantly present and liable to so little change must fulfil some very important purpose.

The blubber doubtless does act as a non-conductor and does prevent the escape of the animal heat, but, that this is its sole and its most important purpose appears to be disproved by the following facts.

- (a) In the newly born calf the animal heat must be at least as liable to escape as at a later age, yet, at this stage of its existence the whale is without it. Scoresby,¹ speaking of the Greenland whale, says 'the blubber of the sucker when very young contains little or no oil but only a kind of milky fluid'; and Sir Sidney Harmer² says 'In newly-born Blue-whales and Fin-whales the blubber is extremely thin.' The same statement is also true concerning the half-grown Greenland whale, yet in it the blubber is only about half as thick as in the adult.
- (b) The thickness of the blubber does not appear to be related to the temperature of the waters inhabited, e.g. in the Greenland whale it reaches a thickness of 20 in. whereas in the Narwhal it only reaches one of 3½ in. although both inhabit the same Arctic waters.

The blubber seems to be merely the skin greatly thickened and modified to enable its possessor—the whale—to lead a marine life. As Bennett, the author of a *Whaling Voyage Round the Globe* says, its most important function is doubtless a hydrostatic one; its lightness doubtless diminishing the whale's specific gravity and helping it to float.

There is a considerable difference between the specific gravity of whale oil at blood-heat and that of sea water. The blubber of a large Greenland whale yields from 20-25 tons of oil; the buoyant effect of this amount of oil must be

¹ Scoresby, W. (Junior), *Account of the Greenland Whale, Balaena mysticetus*, *Memoirs of the Wernerian Society*, Vol. I.

² Harmer, Sir S. F. Presidential Address, *Proceedings*, Linnaean Society of London Session, 142, 1929-1930, p. 104.

very considerable; moreover, oil being incompressible, it must have a buoyant effect at all depths.

Although the blubber has a buoyant effect and helps the whale to float, for the following reasons, its buoyancy or tendency to float or sink depends not on it but on the state of the lungs.

- (a) A Greenland whale can lie at the surface motionless with its 'crown' and part of its back exposed and when extended in this position, as Scoresby says, 'it can sink in the space of five seconds or less beyond the reach of its human enemies.'¹
- (b) As I have stated elsewhere Greenland whales, Bottle-nose whales and Narwhals which died at the surface invariably floated whilst those that died at a depth were heavy and had to be hauled up.²

Scoresby referring to the blubber of the Greenland whale (*Arctic Regions*, Vol. I, p. 460), says:

'Immediately beneath the skin lies the *blubber* or fat, encompassing the whole body of the animal together with the fins and tail. Its colour is yellowish-white, yellow or red. In the very young animals it is always yellowish-white. In some old animals it resembles in colour the substance of salmon. It swims in water. Its thickness all round the body is 8 or 10 to 10 inches, varying in different parts as well as in different individuals

'Four tons of blubber by measure, generally afford three tons of oil; but the blubber of a sucker contains a very small proportion. The quantity of oil yielded by a whale, generally, bears a certain proportion to the length of its longest blade of whale-bone. The average quantity is expressed in the following table.

Length of whale-bone in feet . .	1	2	3	4	5	6	7	8	9	10	11	12
Oil yielded in tons .	1½	2½	2¾	3½	4	5	6½	8½	11	13½	17	21

As the calf is at first blubberless, and as it can doubtless float, the buoyant properties of the blubber seem to be essential to the whale only when it is submerged and its lungs in a compressed condition. At considerable depths the buoyant properties of the blubber are probably very important. At the depth of a mile—about as deep as the harpooned Greenland whale descends—a whale is in a position

¹ Scoresby, W. (Junior), *Arctic Regions*, Vol. I, p. 466.

² Gray, R. W., "Buoyancy of Whales," *Nature*, March 17th, 1928.

similar to that of a bird which is obliged to fly up to a height of 5,000 feet and only has a limited time in which to do it, or in that of an airship confronted with a similar task which, owing to an insufficiency of hydrogen, is unable to float up and has to rely on its engines. It is not surprising that in the olden days Greenland whales embarrassed by the harpoon and whale-line sometimes failed to reappear at the surface. As stated in my *Diving Powers of Whales*, in 1876, my father hauled one up from a depth of 900 fathoms and in his log-books Scoresby, senior, mentions a number of instances of the same sort.¹

The conclusion arrived at, viz. that the blubber is essential to the whale only when it is submerged, seems to be supported by the fact that in whales which, when harpooned descend deepest the blubber is thickest; in the fully-grown Greenland whale which usually descends to a depth of about 800 fathoms its thickness is as much as 20 inches; in the half-grown animal which, as Scoresby states, descends to a depth of 400-600 fathoms its thickness is about 8 inches; and in the Narwhal which only descends about 200 fathoms its thickness is only about $3\frac{1}{2}$ inches.²

The blubber of whales is important in connection with their capture. Were whales blubberless the recently dead animal would only float at the surface with the lungs in an inflated condition; on the other hand, were the opposite the case and the blubber very thick the recently dead animal would invariably float. In the former circumstance the capture of whales with the hand-harpoon and 2 to $2\frac{1}{2}$ inch whale-lines, as in former times, would usually be impossible but in the second the operation for obvious reasons would be a very simple matter.

REVIEWS AND BOOK NOTICES

The Archæology of Sussex, by E. Cecil Curwen, pp. xviii+338, with 32 plates and 89 illustrations in the text. Methuen, 12/6. This new volume in Messrs. Methuen's series of County Archæologies (General Editor: T. D. Kendrick) is a very valuable addition to the literature of the subject. Prehistoric research is much to the fore nowadays, and certainly in the county of Sussex. Mr. Curwen deals only with the period which ends with the coming of the Saxons, and he has found plenty of material for his pen. Beginning with a chapter on Methods and Aims, there follow others on The Setting of the Stage; Primeval Hunters; Food-gatherers, the Dawn of Civilisation; Flint-work; The Coming of Bronze; Celtic Agriculture and the Hey-day of Bronze; Iron and the First Cities; The Development of Pottery, 1000 B.C. to A.D. 50; Roman Sussex; finally a chapter entitled Limbo, in which are discussed problems defying accurate chronological classification. The whole book is extremely well illustrated and there are adequate footnotes and references to periodicals and books.

¹ *Naturalist*, December, 1932, p. 364.

² Scoresby, W. (Junior), *Arctic Regions*, Vol. II, p. 253.

ROMAN YORKSHIRE

Roman Yorkshire, by **F. R. Pearson**, pp. xi+208. illustrated with diagrams, maps and plates. A. Brown & Sons, Ltd., 7/6. Mr. Pearson and his publishers are both to be congratulated on this useful piece of work. In a surprisingly small space the author gives us a most readable account of the Roman occupation of Yorkshire. The titles of the chapters are: The Invasion of Britain and the Advance of the Frontier; The Invasion of Yorkshire and the Foundation of Eboracum; The Subjection of Yorkshire and the Problem of the Pennines; Some Branches of Ermine Street in Yorkshire; Some Roman Roads and Stations in North and East Yorkshire; Some Roman Roads and Stations in West Yorkshire; Roman York; Trade and Industry in Roman Yorkshire; The Coast Defences of Yorkshire. This is a most comprehensive programme, including all that one could reasonably hope for in a book at the price. The reviewer wonders whether it might have been better to put the price at, say, 10/6 and include more illustrations and a list of references.

Mr. T. Sheppard, of Hull, sends us his comments on 'Roman Yorkshire.' He says:—'It can be thoroughly recommended. But, oddly enough, it seems to lack an adequate record of recent discoveries; this can be put right in a future edition, which I feel sure will soon be called for. The recent remarkable discoveries at Brough are referred to, but nothing is said of those who did the work, nor where the finds are to be seen. The inscribed pig of lead found at South Cave, perhaps one of the most important Roman objects found in the county, is referred to, but the student looks in vain for any reference to the place where it can be seen. The most important discovery of a kiln and a three centuries' accumulation of pottery at Throlam near Holme on Spalding Moor (or of the other sensational finds of recent years), is described in four lines, no reference to the discoveries, nor to the resting place of the relics being made! The Roman Villa found at Harpham, with its tessellated pavements, occupies four lines, in which occur the only single reference to the Hull Museum, where the pavements, etc., are preserved. A part of the same paragraph refers to the Rudston Villa and its treasures. It is not recorded that the pavements, etc., are *in situ*, and states that their existence was "suspected" a century ago. Actually they were found and described then. In discussing Roman Signal Stations, it is stated that south of Scarborough such sites "probably never will be determined." A well-known site in Flamborough Village was probably one of these, but awaits excavation. The village of Aldbrough, E. Yorks., may mark the "site of a pre-Anglian settlement, but of this there is no evidence beyond the name itself." Early foundations and quantities of Roman pottery, coins, etc., found at Aldbrough, seem to contradict this. And as to whether Spurn Point being a Roman site, "archæology is silent and the question must remain another of the unsolved problems in the history of Roman Yorkshire"? Reference to literature on the subject, and to the collections preserved in the Mortimer Museum at Hull, disprove this. Thus East Yorkshire and its Roman remains are inadequately described. Judging from the dozens of references to York, it can be assumed that the author has visited the Museum there. He should see others. And it came as a shock to find that the index contains no reference to Corder, Mortimer, and, dare we add, Sheppard! And the author writes from Bridlington!'

YORKSHIRE COLEOPTERA IN 1936

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

THE year 1936 has not been a very good one for beetles, yet fourteen species and one variety have been added to the county list. Additional records have come to hand for several rare beetles, extending their distribution in the county. Mr. G. B. Walsh has taken a number of species in nests of *Formica rufa*, though none are new to the Scarborough district. These were taken at Riccaldale, and are *Oxyptoda haemorrhoea*, *O. formiceticola*, *Thiasophila angulata*, *Dinarda maerkeli*, *Notothecta flavipes*, *Atheta talpa*, *Leptacinus formicetorum*, *Trichopteryx montandoni*, *Ptilium myrmecophilum*, *Dendrophilus pygmaeus*, *Monotoma conicicollis* and *M. angusticollis*. Coleoptera were taken on the Y.N.U. excursions to Hawes, Aberford and Hackness, lists of which are given in *The Naturalist*. Several articles appear in *The Naturalist* on the beetles of the county.

The following list gives the new county records and those for other species, the initials of the captors being :—

E.G.B.	E. G. Bayford, Barnsley.
H.B.	H. Britten, Whitby.
M.D.B.	M. D. Barnes, Huddersfield.
J.R.D.	J. R. Dibb, Leeds.
W.J.F.	W. J. Fordham, Barmby Moor.
W.D.H.	W. D. Hincks, Leeds.
E.J.P.	E. J. Pearse, Mirfield.
T.S.	T. Stainforth, Hull.
G.B.W.	G. B. Walsh, Scarborough.

The following are new to the county :—

- Haliphus nomax* Br. A male in River Wharfe, near Harewood, 10/6/32 (E.J.P.). A widely distributed species recorded from Cumberland.
- Crataerea suturalis* Mann. Beckhole, 9/5/36 (H.B.). Widely distributed in England but not reaching Scotland. Recorded from Cumberland, Lancashire, Cheshire and Nottinghamshire.
- Atheta hygrobia* Th. A single specimen at Bubwith (G.B.W.). A rare species recorded from Hertfordshire, Oxfordshire, several localities in the North of Scotland and Killarney.
- A. laticeps* Th. Rare at Bubwith (G.B.W.). The most northerly record. Very rare throughout Britain.
- A. reperta* Shp. Sleights, 17/5/36 (H.B.). A rare species reaching its most northerly stations in Cumberland and Westmorland.
- A. hybrida* Shp. East Row, moss, 19/3/36 (H.B.). Rare, occurring in Cumberland and as far north as Edinburgh.
- A. hypnorum* Kies. Sleights, 17/5/36 (H.B.). Widely distributed as far as North Scotland and occurring in Cumberland, Lancashire and Northumberland.
- A. graminicola* Gr. var. *brunneipennis* Th. A few specimens at Bubwith (G.B.W.). A form with brown elytre not common anywhere.
- Clambus punctulum* Beck. Skelder, sphagnum, 20/3/36 (H.B.). Very rare occurring in Cumberland, Lancashire and Cheshire.
- Aclypea undata* Mull. Several specimens on a keeper's tree, Buttercrambe, June, 1935 (G.B.W.). Rare and previously not recorded north of Nottinghamshire.
- Meligethes planiusculus* Heer. Mulgrave Woods, 21/10/36 (H.B.). Widely distributed as far north as South Scotland and occurring in Lincolnshire, Nottinghamshire and Northumberland.
- Atomaria atra* Hbst. Skelder, sphagnum, 20/3/36 (H.B.). Rare as far north as South Scotland.
- Dryops anglicanus* Edw. Mickley Lane End (H.B.). A fen species. First described by Edwards in 1909. Rare.

- Magdalis cerasi* L. Allerthorpe, 1/6/36 (W.D.H.). A rare species, previously furthest north from Nottinghamshire, Lincolnshire and Cheshire.
- Eccoptogaster intricatus* Ratz. Whitby, 17/11/35, 5/7/36, Beckhole, 2/5/36, Sleights, 17/5/36 (H.B.). Found on young shoots of Oak. Of southern distribution. Furthest north in Durham and Northumberland. Also recorded from Cheshire and Nottinghamshire.
- Other species of interest already on record for the county are :—
- Panagaeus quadripustulatus* Stm. One example on Spurn Point, 20/6/36 (T.S.). A very rare Yorkshire species, one specimen taken previously at Spurn by G.B.W.
- Aepus marinus* Stroem. Found in some abundance in joints and bedding planes of reef just below high water level in Gristhorpe Bay, 23/8/36 (T.S.). Several examples to the west of Peak Steel, Ravenscar, in joints of shale, 25/8/36 (T.S.).
- Dytiscus semisulcatus* Mull. Abundant at Pickering, but of a dozen specimens taken in early October nine were females (G.B.W.).
- D. circumcinctus* Ahr. Barmby Moor, 11/6/36 (W.J.F.). Rare.
- Orectochilus villosus* Mull. New to V.C. 65. River Wenning, Benthams, North-West Yorkshire, 9/6/35 (M.D.B.).
- Scymnus rubromaculatus* Goeze. Roundhay Park, 28/5/36 (J.R.D. and W.D.H.). New to V.C. 64.
- Carpophilus sexpustulatus* F. Gawber Wood, near Barnsley. A single specimen was taken by Mr. Sutton in the same wood a few years ago (E.G.B.).
- Agrilus laticornis* Il. Two specimens swept from Hazel in copse near Strensall, 5/8/36 (M.D.B.). A rare species only taken near York and at Wheatley Wood.
- Cantharis abdominalis* F. var. *cyanipennis* Bach. Ling Ghyll, Horton-in-Ribblesdale, 2/6/36 (M.D.B.).
- Thanasimus formicarius* L. Taken by Mr. A. Smith, of York, at Buttercrambe Woods, 1/5/35.
- Lyctus linearis* Goeze. In a cabinet at Barnsley (E.G.B.).
- Tetropium gabrieli* Weise, together with var. *crawshayi* Shp. Numbers in all stages of development from dead spruce in Buttercrambe Woods, 13/6/36 (M.D.B.). A rare species attached usually to Larch.
- Stenochorus meridianus* Pz. Barmby Moor, 7/36 (W.J.F.).
- Pogonochaerus hispidus* L. Brandsby, 16/6/36 (A. Smith). A very local species feeding on Ivy.
- Lochmaea suturalis* Th. var. *nigrita* Weise. By far the commonest form on Stanghow Moor, 28/4/36 (G.B.W.).
- Orchesia undulata* Kr. Two specimens beneath bark of dead Ash in woods near Kilburn, 7/3/36 (M.D.B.). A very local species. Only taken at Scarborough and Doncaster.
- Barypithes pellucidus* Boh. Roundhay Park, 28/5/36 (W.D.H.). A rare species new to V.C. 64.
- Phyllobius maculicornis* Germ. var. *cinereus* Fowler. Allerthorpe, 1/6/36 (W.D.H.). The variety is new to V.C. 61.
- Dorytomus tremulae* F. Allerthorpe, 1/6/36 (W.D.H.). New to V.C. 61. A very rare species only recorded from Knaresborough by Walton.
- D. tortrix* L. Abundant on sallows at Blackmoor, near Shadwell, Leeds, 10/6/36. Colour variable, many examples being very dark brown, almost black. 'I have noted this species in the same spot for the last ten years' (J.R.D.).
- Eccoptogaster mali* Bechst. One specimen swept in Etton Ghyll, Helmsley, 3/8/36 (M.D.B.). A rare species only recorded from Scarborough.
- Hylesinus crenatus* F. Several specimens boring into bark of Ash stump, Etton Ghyll, 3/8/36 (M.D.B.).

NOTES ON THE GENUS *CRIORRHINA* Mcq. (*PENTHESILEA* Mg.)

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

THE flies of the Syphrid genus *Criorrhina* are well known from their resemblance to humble-bees and their economy is undoubtedly connected with these insects. The species *Criorrhina kincaidi* in North America is stated to be received into the nests of the bee *Bombus americanorum* and its resemblance to this species is very great. In England Tuck has bred *C. floccosa* from a humble-bee's nest. Harwood has bred the same species from a cocoon found at poplar roots. On the continent von Roser found the larva of *C. oxyacanthae* in flood refuse at Neckar, and Lundbeck found a pupa of *C. berberina* under moss on a tree stump in a fen. There are five British species which are found early in the year. They are very partial to the blossoms of sloe, hawthorn, laurel, sawallow, *Euonymus* and *Rubus* and are also taken on Umbelliferae.

Criorrhina ranunculi Pz. (*ruficauda* Mg.) is the largest of the genus and is black with the end of the abdomen reddish or whitish. Verrall (*British Flies*) says by no means common. Found in south and south-west England in spring on early blossoming shrubs. His most northerly record is from Sherwood Forest. It occurs from Middle Europe to Italy. It has been taken at Grange-over-Sands in March and also at Witherslack in early April (Britten) and the writer has taken it in Bleasdale, Lancs., in May, 1919. Robson took a single specimen at Winlaton in Durham and it has been taken at Hovingham in Yorks. by Inchbald. These are the most northerly records up to date. Mr. Britten states that Grange-over-Sands seems to be one of the headquarters for this genus in the north, most of the British species having been taken there. *C. oxyacanthae* Mg. is a tawny haired species like *floccosa* and *berberina* and mimics *Bombus muscorum*. Verrall states that it is the commonest English species on hawthorn and umbellifers in the south of England. It has been taken from May to early July. Dr. Haines has taken a female of this species in cop. with a male *berberina* near Wool. It occurs at several localities in Nottinghamshire and has been taken in Yorkshire at Middleton (Ashworth). It is recorded from Scotland at Corstorphine Hills and Grange Loan (Bowhill) and also at Comrie and Barr and there is a specimen in the Royal Scottish Museum from Perthshire. The writer has taken both sexes at Low Fell, Co. Durham.

C. floccosa Mg. is, according to Verrall, by no means common in England. His most northerly record is from Sherwood Forest. It has occurred in Yorkshire at Keighley,

Shipley Glen, Gilstead, Barden, and Fylinghall. It has also been taken on mountain ash on Helwith Moss. The present most northerly records are from Co. Durham, where Wingate took two females at Bishop Auckland and the writer took several at Low Fell in May and June, including a fine male on *Heracleum* under a cherry tree. *C. berberina* F., another tawny species, is stated by Verrall to be rather uncommon on hawthorn blossom in the south of England, essentially a May species. His most northerly record is from Notts. It occurs from North and Central Europe to Piedmont. In Yorkshire it has been taken at Grassington and Barden (Butterfield), and Fylinghall (Fordham). Hamm has taken it at Cothill in Berkshire, a long series attached to *Euonymus europaeus*. It has occurred to the writer at Low Fell, Co. Durham, and the most northerly captures are three specimens from East Lothian (Bowhill) and specimens in the Royal Scottish Museum from Kilmaurs in Ayrshire and Helensburgh in Dumbarton.

C. asilica Fln. is a greyer species having a rather different facies. It is said by Verrall to be not uncommon on early hawthorn blossom in extensive woodland or forest districts in early spring. His most northerly records are from Herefordshire and Worcestershire. Butterfield has taken it at Barden in Yorkshire, and it has occurred to the writer on Allerthorpe Common. It is recorded from Derbyshire in the Victoria County History and from Grange-over-Sands in Lancashire. Its most northerly record is a male at Low Fell, Co. Durham (Fordham, *Vasculum*, XII, 76). Hamm has taken a long series at Cothill, Berkshire, on species of *Rubus* and previously on hawthorn. Several specimens have been taken in Nottinghamshire in three localities.

The writer is indebted to Messrs. H. Britten, J. E. Collin, and P. H. Grimshaw for help in the compilation of these notes.

Thirty Years of Nature Photography, by Seton Gordon, pp. xii+98, with 108 full-page collotype plates of photographs by the author and his wife. Cassell, 21/- . Most naturalists will be acquainted with some of Mr. Gordon's fine work in the field of nature photography, and this book will not disappoint the most critical enthusiast. It is a fine collection, and includes some of the author's earliest work of more than thirty years ago, when he was equipped with a half-plate Thornton Pickard camera with a Dallmeyer lens. It is interesting to note that Mr. Gordon does not work with a large number of up-to-date cameras, but keeps to one or two simple types which are comparatively inexpensive. Some of the most interesting of his pictures are early efforts made without a hide. Comparison of these with later photos taken from a good hide show very clearly the great advantage of concealment when attempting portraits of birds in characteristic attitudes. This is a book which should be seen by all nature photographers. It would make an ideal present for a naturalist.

THE YORKSHIRE NATURALISTS' UNION'S SEVENTY-FIFTH ANNUAL REPORT FOR 1936

(Continued from page 48)

BOTANICAL SECTION

(Chris. A. Cheetham): The section has suffered heavily this year by the deaths of F. A. Mason, its recorder for Mycology, and two members of the Bryological Section, W. Bellerby and E. Hallowell; the toll is heavy, but still the work goes on, thanks to fresh addition to the ranks. At field meetings of the Union botanical work has been to the fore and the pages of our journal show how new plants have been noted, old records investigated, new ecological features seen, and fungus pests examined.

Thanks to the ready response to an appeal for assistance, your Secretary has been able to get a broad view over the year and its effect on the vegetation of our county.

The weather has been very variable and individuals have been influenced differently by the varied samples, one thinks of the keen frosts of February, another the cold easterly winds of spring-time, or say the wet of July and so on. January was the wettest month, February gave us very keen frosts, March a little milder, April and May almost a drought with cold easterly winds, which kept on well into June. This weather stopped the growth of the grass, then the latter part of June and all July gave us a rainy period, when the grass commenced to grow as haymaking was in progress, and this was difficult owing to a lack of sunshine. With such weather conditions it is not difficult to find reasons for the poor display of flowers in Spring and early Summer. The Purple Saxifrage did not get into bloom on Pen-y-ghent until 16th March, and the amount of bloom was far below that of the last few years. The Mealy Primrose display was poor, and one might say that on Sulber pastures only one plant in fifty flowered. This is a place where acres are coloured pink in normal seasons. Down at lower elevations in wetter places this was less evident, however. The Globe flower was below normal, the Rockrose was another poor display, and the Orchids all were poor. On the other hand, some of the shrubs like the Blackthorn, Hawthorn, and Blackberry had a very fine show of bloom and have had a good amount of fruit, though somewhat late in the year. Heather, or more correctly Ling, was late in flowering, and the St. John's Worts made a poor show, but garden flowers have made amends with a mass of bloom in Autumn. Speaking generally, the fruiting of our trees and shrubs is a good average crop; if any stand out particularly it will be the Rowan, and, perhaps, the Sloe and Blackberry, if the latter get to maturity. Nor is there any lacking fruit as did the Ash last year. The Mushroom crop has been poor, though some agarics such as the *Hygrophorus* species have been better this year than they have for the last two, no doubt due to the wet of July and August, whilst the Mushroom was spoilt with the early drought. The wet of July helped the Cloudberry to produce much better fruit than last year, and not only started the grass into growth, but induced a good deal of secondary growth on many trees, the Hawthorn, Elm, and Oak showing a good deal; there was also a very keen frost at Whitsuntide, which killed off the early leaves on many Ash trees and ferns, these all made a fresh start, which in the case of the Ash appeared as the normal growth, the first leaves being entirely lost. A. E. Greaves, writing from Goole, mentions two plants which have flowered well: *Gentiana Pneumonanthe* at Skipwith, where he saw one plant with eight flowers on the one stem, and *Chrysanthemum segetum* in the same district, where this weed was

so plentiful that it might have been the crop, so thick was the growth, the mass of yellow flowers providing a very beautiful effect; on the other hand at Melbourne, where in one spot last year he saw seven or eight plants of *Habenaria bifolia*, he could only find a single specimen.

W. G. Bramley, writing from Bolton Percy, says a marked feature in this locality is the abundance of Sloes; the last nine years Sloes had been scarce, occasionally a bush would have a few, but this year they are hung like grapes on many bushes. Another result of the weather he cites is the abundance of aftermath in the hayfields. Up to the beginning of June the hayfields were rather bare and in some cases did not appear to be worth cutting, but the advent of somewhat warmer weather finally produced a good crop of grass, much of which, however, only made poor hay.

Miss C. M. Rob, writing from Thirsk, says: 'As regards these parts both flower and fruit have been very abundant, the hazel catkins were a perfect picture, and there is a very good crop of nuts. All trees flowered well, the Ash being above the average, while there are more brambles than we have had for a number of years. There have been no Mushrooms at all this year about here, but fungus diseases in my garden seem to flourish. The Rowans on the hills have been a wonderful sight, but the birds did not leave the berries for very long.

(A. Malins Smith): Shipley district mainly, with some reference to Buckden: Taking it all round this has been the best year for fruiting in this district since I began my annual observations. In no year have there been so many species with good crops and so few failures.

Outstanding events have been:—

- (1) The enormous crops on the Mountain Ash. This was noticed also in the Buckden area.
- (2) The very general cropping of the Hazel. This is the first year in which nuts have been at all common in this district. Usually the total crop in the district is under half a dozen nuts. In the Buckden area the crop was general, but not heavy.
- (3) The enormous crops of Crab Apples. There are not many mature Crab Apple trees in the district which are capable of bearing, and most of these are heavily laden.
- (4) This is the first year in which I have noticed a good crop of Maple fruits.

OAK.—There are a great many acorns this year, but as is usual in this district there are a good number of barren trees. I estimate about 40 per cent. barren, 40 per cent. with moderate crops, and 20 per cent. with heavy crops. There is some evidence that a southerly slope has increased the crops, as would be expected in a wet sunless year. About here a great fall of undeveloped acorns occurred in the first week of September, when the weather was wet and dark.

BEECH.—Many trees have very good crops, though a good many also have no fruit. I have so far only found one good seed in the cupules. I have evidence that trees which bear crops this year are the same as bore good crops two years ago. This tendency to successful fruit-bearing may be hereditary, or it may be due to soil and aspect, but I have no evidence of the latter.

(P. Burnett and other members of the Whitby Naturalists' Club): Exceptionally severe frosts during February had an adverse effect on the herbage. The keenest frost was on the night 12th to 13th February. On the latter day the bed of the Wheeldale Beck at Goathland was, in places, covered with ice from side to side, and all the pools were frozen over. On the 15th February it was observed that large patches of mosses on the Moors had turned from a green to a pale buff colour, giving the moister portions of the Moors a very dull appearance. A similar bleaching

effect was noticed in algæ growing on stones in the beds of the Wheeldale and Eller Becks. Grasses on the Moors were killed to a lesser extent and soon recovered on the advent of milder weather. The mosses and algæ were entirely destroyed in places. Another keen frost, with a strong N.E. wind, on the night of 10th to 11th June, had a very destructive effect on the bracken, the young fronds being killed over large areas. Fronds which were above 6 in. in height were not so severely damaged as were shorter and more succulent ones. The Oaks were also damaged, particularly on the N.E. sides near the tops of the trees. As a result of continuously cold weather during the first half of the year, nearly all herbaceous plants were late in starting to grow. Trees and shrubs did not show the same delay in development. The indifferent summer weather, with a pronounced lack of strong sunshine, was responsible for a noticeable prolongation of the flowering season of Spring and Summer plants. The petals of the Ling first began to unfold on the 10th August. There was an average amount of bloom, but the flowers were not much visited by bees. Possibly there was a poor secretion of nectar.

There has been marked secondary growth on the Oak, principally on the N.E. sides of the trees. This growth may possibly be associated with the damage caused by the frosts early in the year. Fungi are very much more plentiful than they were last year.

Too much unnecessary burning of moorland is taking place, the result being the destruction of the Ling and subsequently the domination of the area by bracken which quickly gains a foothold.

GOATHLAND (R. J. Flintoff) : The rapidity with which bracken is encroaching on *Calluna* on the Moors is a very serious menace. In the fence around my garden and dividing off the Common I have to a large extent destroyed the bracken by cutting it three times a year for a few years. I allow it to grow about a foot high. I believe this is one way of controlling bracken growth if not exterminating the fern, although only the other day a farmer, Mr. Macklay, of Low Horcum, Saltersgate, told me that some years ago when he was working another farm he cut the bracken three or four times a year for five years, and although this method reduced the bracken, it did not exterminate it.

The cause of the rapid growth of bracken during recent years is attributed to the greater practice of burning the Ling, thus enabling the bracken to get a good growth before the Ling, which is then smothered by the quickly-growing bracken. There is no doubt that to a large extent this is true, but whether the burning of the Ling is the only cause of the rapid spread of bracken is another matter. But the rapid extension of the bracken area at the expense of the Ling is a great menace and worthy of the consideration of botanists in order to find some method of dealing with it.

SCARBOROUGH DISTRICT (E. R. Cross) : The Spring was one of the most backward for many years ; we had a great deal of wet and much fog, very little snow in the immediate district of the sea-side, but an absence of sun, giving dull, cold days, and as a result the Spring flowers were later than usual. For nearly every year of the last fifty I have visited the May Lily, *Maianthemum bifolium*, and I note with regret that this year for the first time I was unable to obtain a single bloom in its original position. Some 25 years ago the wood in which it occurs, and which was constituted of sparsely-placed Oak trees, was cut down, and afterwards replanted with larch. The fallen needles and dark shade have prevented the plant blooming, and it is now having a severe struggle for existence. Dwarf Cornel, *Cornus suecica*, which grows in the Hole of Horcum, was there in profusion, and is extending its range, although growing as it does near a popular motor camping ground the

blooms are very much gathered. One or two patches grow on Cross Cliff, near Langdale End ; these are getting so overgrown with bracken that it is almost impossible to find a bloom.

A field down Harper's Lane near Seamer Moor, which used to have some hundreds of specimens of *Orchis ustulata* was visited by me this year and not a single plant could be found. A few plants were seen at Brompton, which is probably its nearest locality to Scarborough. The Bee Orchid, *Ophrys apifera*, occurs in Forge Valley ; here, the spot where it grows is now used as a camping ground, and fires are lit upon it, so I think this locality will disappear.

HUDDERSFIELD DISTRICT (W. E. L. Wattam) : The winter period of 1935 was both severe and prolonged. Cold, inclement conditions were the keynote of the opening of Spring, and throughout the greater part of Spring a persistent wind from the east-north-east was most pronounced. Indeed, it was not until the beginning of June that a seasonable condition ensued. July was generally sunless, windy, and wet, and naturally these told their tales. August gave more normal weather conditions with a glorious amount of sunshine in its last 14 days, and this made amends for the disappointing periods. Apparently the conditions were agreeable to trees if one might judge by the magnificent display of blossoms produced by the Hawthorn, Lime, Horse Chestnut, Mountain Ash, Wild Service, Alder, Elder, and Wild Roses. I have given much attention to the Ash, having regard to the lack of blossom in 1935. There was a distinct promise of a fairly good fruitage yield, and whilst a large number of trees which generally produce blossom were again barren in this respect, others heavily laden with bloom suffered severely from the cold inclement conditions and the heavy gales during the flowering period, with the consequence that many were entirely stripped, whilst others had their productive yield greatly reduced. Indeed, fruit clusters of 10 to 20 are in the majority. In the more sheltered surrounds of Cawthorn and Bretton, however, the fruit clusters have an average of 20 to 40. Taking a census of our district I am of opinion that ' moderate ' is the best term to apply to the fruitage yield of this tree.

(A. Malins Smith) : In the Shipley district the outstanding failure is the Ash. I have only seen one tree with a good crop. A few have very small crops, but the majority have none. For this district I am sure of the cause of this. Following on the total failure of flowering in 1935, I expected good flowering in 1936 and began observations in continuation of those made in 1934 on the sex of the Ash trees of the district. I have details of 26 trees noted in 1934, and again observed in 1936. The general outcome of these and some new ones was that while some male trees flowered profusely, the hermaphrodite trees flowered very sparsely and often the whole tree would have only one or two clusters. In these circumstances little fruit could be expected. In every case observed the sex of the tree remained the same as in 1934. There is one interesting tree which seems to be intersexed. In 1934 it flowered in profusion, its flowers being almost wholly male, and it did not form any fruits. Nevertheless, it showed the ' whiskery ' stalks of previous fruits of one or two years before, so that it could not be wholly male. In 1935 it did not flower, and in 1936 has borne separate male and hermaphrodite clusters. From the latter a very small crop of fruits has been produced.

An Ash tree which bore an exceptionally heavy crop of fruits in 1934 has since gradually died in all its outer branches and has this year sent up fresh green shoots from the thicker boughs in the centre. It is impossible to say that the decay has been due to overcropping, but the sequence of events suggests it.

Ash seedlings have been a great feature of the year in this district, and, in fact, in all districts observed. Since there was no fruit at all here in 1935, it seems clear that the Ash seed takes two years to germinate in normal circumstances. Nevertheless, Mr. Malone informs me that if soaked for a long period the seed will germinate in one year.

Besides the Ash seedlings, no other seedling has been exceptionally plentiful except the Elm. I am informed by Mr. W. P. Winter that he has seen far more Elm seedlings than usual.

(W. E. L. Wattam) : Seedlings of Ash (1934 seed crop) have been most abundant, and so have those of Sycamore and Elder. At the beginning of July I came across quite a large number of Hawthorn seedlings at High Flatts, Cumberworth. Areas of old heath land cleared by fire have been rapidly redenized with Ling, *Deschampsia flexuosa* and *Ulex Gallii*.

(W. Balmforth Haley) : At Ravensthorpe *Typha latifolia* has made its appearance on the banks of the Calder here, and has sent up four fine spikes of bloom, surely a strange habitat for such a plant. *Convolvulus americana*, *Coronilla varia*, *Sisymbrium austriacum*, and *Claytonia sibirica* are still with us, and seem to be holding their own. *Euphorbia Pseudocyparissias*? is gradually being squeezed out by that obtrusive *Impatiens glandulifera*.

Secondary growth has been noticed in different ways by our recorders, your Secretary considered it plentiful, especially on Hawthorn, Elm, and Oak. Miss Johnson, from Walton, says : 'Secondary growths occurred during late June, July, and August, Hawthorn particularly.' W. E. L. Wattam : 'Secondary growth has been prominent, Oak shoots of from 6 to 12 in. in length. In late August also quite distinct new growths were visible on *Betula alba* (Silver Birch), and Horse Chestnut, some 4 in. in length.' A. Malins Smith : 'Secondary growth has been seen on many trees, but has not been exceptionally abundant.' W. G. Bramley : 'There was a fair amount of secondary growth on Oak and a small amount on Hedge Maple.' W. Balmforth Haley : 'Secondary growth this year is a feature, especially among the Oaks.' R. J. Flintoff : 'I find a great difficulty to express a definite opinion of any relative quantitative value for comparison from year to year on secondary growths. In fact, it is to me impossible, for I know of no precise terms in which to appraise the extent of such a growth, and, therefore, all I can do is to state generally such as good, bad, or indifferent, the condition as it appears to me. I cannot think such vague forms are of much importance over a period when made by the same observer, much less for comparison with the opinions of others in different districts. It is no uncommon incident to find trees of the same species only a little distance from each other showing a marked difference in regard both to secondary growths and fruiting. I have studied in a limited sense this subject, and my opinion is that secondary growth is dependent on the extent of the primary growth. When the primary growths develop in a normal manner, that is uninjured by frost, insects, or any other cause, then there is very little secondary growth, a condition obtaining this year in the Goathland district. But if the primary growth be more or less destroyed by these agencies, then the amount of the secondary growth will vary inversely to the extent of the primary, thus the greater the primary before injury the less the secondary, and the less the primary the greater the secondary. My experience is that if growths can be classified as a result of an interval of apparent rest intervening between them it is, in some cases, quite correct to speak of a tertiary growth. The weather, particularly the rainfall—i.e. the water-content of the land—has also an important influence. In Goathland this year secondary growths have been normal, that is short, because primary growths developed well as a result of the favourable conditions obtaining.

Records Committee (W. A. Sledge) : My request for records for incorporation in this annual report has met with such a gratifying response that I am faced with the difficulty of deciding what to include and what to omit, and lest contributors of notes should feel that insufficient use has been made of the records they have submitted to me it might be as well to define the scope of this report, which is to summarise the salient features of the year's work on the topographical botany of the county, *i.e.* new county and vice-comital records, new records for rare species, additional areal records for species of local occurrence, and confirmatory records for rare plants previously recorded, but not recently observed in any particular locality.

EAST RIDING.—A note has already appeared in *The Naturalist* recording Mr. J. Kendall's discovery of *Myosurus minimus* L. at Aughton, new to East Yorkshire. Mr. T. Stainforth records *Lathraea squamaria* L. from Raywell, near Hull, found by Mr. R. Beardshaw, and *Lycopodium clavatum* L. from Houghton Woods, both very scarce species in V.C. 61; whilst *Orobanche major* L. has been reobserved at Keyingham by J. Davies. Mr. Stainforth also alludes to the successful spreading of a patch of *Spartina Townsendii* H. and J. Groves, which was introduced at Welwick on the Humber shore some years ago. Numerous tufts now exist, spreading both outside the Salicornia zone of the Saltmarsh and invading the higher Sea Aster zone. *Scutellaria minor* Huds. is recorded as plentiful on Brighton Common near Howden by Mr. A. E. Greaves.

NORTH RIDING.—The most important record is for *Bromus lepidus* Holmb. (= *B. britannicus* I. A. Williams), discovered by Miss Rob and myself at Topcliffe. Specimens of J. G. Baker's from Thirsk in the national collection at South Kensington, are the only others known for the North Riding. Miss Rob also records *Lactuca virosa* L. from Moor Monkton and East Cowton, and the alien dodder *Cuscuta suaveolens* Ser., which appeared at Catton last year has reappeared on clover in a different field. Other aliens include *Petasites albus* Gærtn. from Middleton Tyas, V.C. 65 (B. R. Lucas), *Senecio squalidus* L. from Coatham, *Datura Stramonium* L. from Thorpfield, near Thirsk, *Caucalis latifolia* L. and *Ægilops cylindrica* Host. from Tanfield and *Centaurea diffusa* Lam. from Topcliffe. Mr. Britten records *Specularia hybrida* Del. from Kettle-ness, *Epipactis palustris* Sw., and *Serratula tinctoria* L. from Runswick, and *Rosa arvensis* Huds. var. *gallicoides* Crep. from Beckhole.

WEST RIDING.—Notes on the discovery of *Carex elongata* L. at Askham Bog and *Equisetum variegatum* Schl. on Malham Moor have recently appeared in *The Naturalist*, where it was pointed out that the former had not been seen in the county for over forty years, whilst the latter confirms an overlooked record of Backhouse's made nearly a century ago. A visit to Austwick in July yielded two new records for this inexhaustible area, *viz.* *Juncus compressus* Jacq. and *Campanula persicifolia* L. The *Campanula* was found in a wood near Clapham Station and though certainly not native there was far removed from any garden. Some interesting sedges were gathered by me at Tarn Moss, Malham, one of which is a robust form of *C. diandra* Schrank., recorded in Lee's Flora as var. *Ehrhartiana* Hoppe., but presumably representing *C. pseudo-paradoxa* Gibs., which Gibson recorded as growing at Malham Tarn. Other specimens in the same bog, growing intermixed with *C. diandra* Schrank and *C. paradoxa* Willd., will, I believe, prove on further examination to be *C. limnogenæ* Appel. (*C. diandra* × *paradoxa*), a hybrid new to Britain. Hybrids of *Orchis purpurella* × *Fuchsii* were plentiful at Malham Tarn and also at Ribbleshead, and some fine colonies of *Viola hirta* × *odorata* were found by Mr. G. A. Nelson and myself at Becca Banks, Aberford, and Boston Spa.

Mr. Malins Smith records *Galium uliginosum* L. and *Anagallis tenella* Murr. from Marley Bog, both rare species in the Aire Valley, and Mr. T. Franklin has found *Actæa spicata* L. in Langshaw Wood, Towton. Mr. A. A. Dallman has published (*North-western Naturalist*) a list of species observed by him in the Doncaster area, and it is gratifying to know that *Tulipa sylvestris* L. and *Fritillaria* are still to be found in the district.

Ecological Committee (Miss D. Hilary): Although no official meeting of the Committee has been held this year, ecological work has been quietly going on among the members.

The work on Juniper has continued in some of its aspects. Mr. Wattam's observations on the germination and growth of Juniper seeds have been carried still further, and he has furnished a very useful report on these, the most striking feature of which is the further evidence given of germination delayed for long periods. In the case of these later germinations, the average time which elapsed between the date of sowing and the date of emergence from the soil is about $2\frac{1}{2}$ years, and $3\frac{1}{2}$ years from the presumed date of pollination. Growth of the seedlings is very slow in the first year, but, as would be expected, faster in the second year, and the two-year-old plants have obtained a height of 8 in. The Committee highly appreciates Mr. Wattam's work and hopes that he will shortly collect together the results of this very useful work on Juniper seedlings.

During the winter, Mr. Cheetham obtained from Moughton Fell, during severe, snowy weather, branches of Juniper which had been damaged by rabbits which had removed the bark chiefly from the under-side of the spreading shoots. We are thus assured that rabbit attack is of some importance, not only to young plants, but also to more mature bushes. It is important to have this point established for Moughton, as ecologists in the south of England report that the Juniper is not much damaged by rabbits, and in consequence forms a protection for other plants. Thus Watt (*Journal of Ecology*, 12) says that at Kingley Vale almost every Yew is growing along with a living or dead Juniper. Also when the South-eastern Union of Scientific Societies visited Ashton Hill early in July of this year, they found dense thickets of Juniper protecting seedlings of White Beam, Yew, and Beech.

On Moughton we are thus accumulating evidence somewhat opposed to that furnished from the south, and it would be well to have still more details of the nature and extent of rabbit damage. It does not seem likely, however, that rabbit damage alone can account for the dying out of Juniper over considerable areas, such as Long Scar and Moughton, and there is need for further investigation of the leaf-spot fungal disease of Juniper or of any other fungal attack, as this would more satisfactorily account for the phenomena observed.

The Chairman visited the Swaledale Juniper on Kisdon Fell at Whitsuntide, and his report of this visit has already appeared in *The Naturalist* (August, 1936).

Mr. Cheetham has found Juniper in Coverdale and it might be well for the Committee, when opportunity occurs, to survey the whole of Yorkshire Juniper with the factors brought out on Moughton to guide us to fundamental generalisations.

Members of the Committee have been present at all ordinary meetings of the Union, and the ecology of the various districts visited has been noted. Our Chairman reported on the ecology of the Hawes district at the Whitsuntide meeting.

The following report of ecological work carried out at Huddersfield is sent by Dr. Grainger :—

'The biological survey of Dean Clough, Netherton, Huddersfield, has been continued. Particular attention has been paid to the hardness

of the various springs, and those on the north side, brought about by the reversed drainage, fluctuate considerably in the matter of hardness. They are, in general, harder in Winter than in Summer. Ecology of the larger fungi in the Clough has also received attention.'

Studies in the ecology of fungi have been made and are reported at greater length in the Mycological Committee's account of its proceedings.

Bryology (F. E. Milsom): There has been considerable activity in bryology in the county during the past year, as the pages of *The Naturalist* indicate. The records of bryophytes in the sectional reports of the excursions have been more numerous than usual, as it has been considered desirable to give complete lists of all species noted.

New records have not been conspicuous numerically, but pride of place must be given to *Hypnum hamulosum* B. and S., discovered at High Green Field (V.C. 64). A separate account is given in *The Naturalist* for July. Another interesting find was a much reduced form of *Campylopus atrovirens* De Not, since placed with var. *gracilis* Dixon, on the slopes of Moughton (V.C. 64).

Hepatics have fruited well this year. This was especially noticeable on the Drop Clough excursion, on which, among others, was found *Calypogeia Trichomanis* (L.) Corda.

An interesting feature has been the publication of several papers dealing with county distribution of mosses. Such work, of a general rather than a systematic nature, is to be encouraged, as too little is done among bryophytes in this direction.

The note on *Thuidium abietinum* B. and S. and *T. hystricosum* Mitt. draws attention to the desirability, emphasised in previous reports, of checking up old county records.

Though not strictly in Yorkshire, it is appropriate to refer to the discovery in Teesdale, first made in 1934 by Professor Walton, of Glasgow, of *Mærckia Blyttii* (Mærck.) Brockm. This hepatic had previously been known in Britain only from the summits of the higher Scotch mountains. It is thus linked with the records of Scotch species from North Yorkshire, these including *Splachnum vasculosum* L. from Mickel Fell, *Mielichhoferia nitida* Hornsch. var. *elongata* B. and S. from Ingleby Greenhow, *Lophozia lycopodioides* (Wallr.) Cogn. from Ingleborough and Mickel Fell. The problem of the reason for these isolated records is an interesting one.

Mycological Committee (Dr. J. Grainger): The year has been clouded by the death of a valued colleague and kindly mycologist, the late F. A. Mason, whose passing we deplore. At the time of his death, Mr. Mason was preparing a List of Yorkshire Records of Fungi. The manuscript of this was placed in my hands by Mr. R. Fowler Jones, with a request that it be completed. This has now been accomplished, and in addition, more than a thousand extra records have been added from the detailed notes of the late Alfred Clarke, which are in my keeping at Ravensknowle Museum. Through the generosity of Mr. R. Fowler Jones, who originally stimulated the collection of the manuscript records, the text is to be published, and should provide a sound basis for future vice-counties classification and record. Records for each species are set forth by vice-counties.

The year has also brought the completion of another piece of work, namely Mr. T. Petch's critical studies of the Hypocreaceæ, a section of the Ascomycetes. We rejoice that Mr. Petch was induced to consider the preparation of this manuscript through our representations, at the Barnard Castle foray, 1933, that the classification of the Ascomycetes was in a parlous state, and could not something be done to remedy the lack of literature? Each successive foray has brought from Mr. Petch

a detailed study of a particular genus, and the completed manuscript was laid before the Mycological Committee at its foray at Buckden, this year. It is hoped that this will be published shortly, with line diagrams to illustrate typical generic characters.

Torrubiella aranicida Bond., a new British record, was found by Mr. Petch at the Buckden foray this year. *Isaria exoleta* Fr. is also a new British record. It was found by Mr. W. G. Bramley at Tadcaster in July, and also appeared at Buckden. *Epidochium xylariae*, a recent record for Britain, was found again at Buckden, whilst *Stereum Karstenii* Bres., established as a new entrant to the British fungus flora at the Buckden foray, 1922, was again found by Mr. A. A. Pearson at Buckden in 1936, not having been recorded from any other British locality in the meantime. The new gathering has enabled Miss E. M. Wakefield, of Kew, to verify the diagnostic characters of the cystidia. Mr. Pearson also found *Astrosporina napipes* (Lange.) Pearson (= *Inocybe napipes* Lange.) at Buckden. He has recently described this as a new British species.

The erratic distribution of some of the perennial rust fungi has often been noticed in the field. At the Hawes meeting at Whitsuntide, two patches of *Anemone nemorosa*, only 160 yards apart, were observed. One of them was heavily infected with *Puccinia fusca*, a fungus with mycelium perennial in the rhizome; the other was quite free from this parasite. Samples of soil and plant material were taken, but no significant difference in reaction of the soil, its physical texture or water content, nor the amounts of soluble reducing and non-reducing sugars, of insoluble carbohydrate, of total and soluble nitrogen, could be found of sufficient magnitude to account for the absence of the fungus from one patch and its abundance on the other. This work was performed in collaboration with Mr. C. Ridgwick, of the Honley Naturalists' Society, and the results focus attention upon the relative immobility of the teleutospores, which are the sole spore equipment of this fungus. Tests with a spore-catcher attached to a car have never given any teleutospores, where basidiospores are quite common.

The Powdery mildew fungi, another pest, usually attack the young leaves of their hosts, rather than the older leaves. Tests of the sugar content of mildewed leaves of Oak, *Prunus Padus*, and Rose, show that the fungus attacks leaves with a high content of soluble sugars (between 20 to 30 per cent. of the dry weight). Differences as great as 16 per cent. in sugar content have been found between mildewed and non-mildewed leaves which were very close together on the same shoot. It is usually the midsummer growth of Oaks which is attacked. This work is being prosecuted in collaboration with Mr. A. Broadbent, a new member of the Union.

A little group, including Mrs. Grainger, Miss J. Grainger, and Mr. A. Broadbent, have studied the relations of soil acidity, moisture and organic matter contents of the substrate, to the occurrence of the larger fungi. Mr. R. Fowler Jones has generously provided printed record slips, which facilitate tabulation. It is now possible to assign rough limits to the range of acidity favoured by several of the common species. The acidity relations of several of the coprophilous and lignophilous fungi are also in process of elucidation. In general, *Stropharia semiglobata* dominates acid cow manure, whilst *Panaeolus campanulatus* favours more neutral, or alkaline dung. Fungi which attack freshly-felled wood are growing in an acidity of about pH 2.7, and from several of the Polypores, which can do this, to such relative neutrality-loving fungi as *Lachnea scutellata* and *Pluteus cervinus*, all degrees of acidity are found. Progress towards neutrality of rotting wood is usually accompanied by progressive lack of coherence, and experiments with a hardness tester seem to give results commensurate with the evidence of acidity measurements.

Mr. R. Fowler Jones has been elected Chairman of the Committee for the present year. Mr. Willis G. Bramley and myself are entrusted with the task of recording. Mr. G. Sheard is the new Hon. Secretary and Convener, whilst the names of Mr. W. E. L. Wattam and Miss J. Grainger have been added to the Committee.

INCOME & EXPENDITURE ACCOUNT

Year ending, October 1, 1936.

INCOME.			EXPENDITURE.		
	£	s. d.		£	s. d.
Life Membership Subscription		11 11 0	Secretary's Expenses—		
Members' Annual			Stationery	1 16 6	
Subscriptions, Arrears	23 10 0		Cash	11 3 0	
Current	46 15 0				12 19 6
Advance	0 5 0		General Account—		
		70 10 0	Printing and Stationery		56 9 0
Levies from Affiliated			Renting of Rooms ...		0 9 0
Societies, Arrears	5 11 2		Treasurers' Expenses		
Current	7 8 2		Stationery	1 6 10	
		12 19 4	Postages	3 16 6	
Income from Investments—					5 3 4
£200 4% Consols ...	8 0 0		Income Tax		3 5 3
£170 16s. 9d. 4½% Conversion ...	7 13 8		Wreaths		4 9 6
Booth Fund—			Grant to Wild Birds & Eggs Protection		0 10 0
£100 3½% Conversion	3 10 0		Mycological Public Meeting		0 9 0
Cheeseman Fund—			Bank Charges		0 12 6
£100 3½% War Loan	3 10 0		Naturalist—		
		22 13 8	Editor's Postages ...	9 0 4	
Bank Interest		0 0 10	Naturalist to Members	154 4 3	
Naturalist—			Naturalist Exchanges	5 12 6	
Subscriptions, Arrears	47 0 0		Binding	0 16 10	
Current	89 10 0				149 13 11
Advance	0 10 0		Special Illustration ...		2 7 6
		137 0 0	Balance of Income over Expenditure		34 8 11
Donation to Plate in <i>Naturalist</i>		3 7 6			
Discounts		4 19 1			
Income Tax Repayment ...		7 15 0			
Sundry Donations		1 1 0			
		<u>£271 17 5</u>			<u>£271 17 5</u>

BALANCE SHEET, October 1, 1936.

LIABILITIES.			ASSETS.		
	£	s. d.		£	s. d.
Subscriptions paid in advance	...	0 15 0	Cash at Bank	101 3 1	
Life Members' Account	...	404 5 0	Cash in Hands of Treasurer	...	2 6 5
Booth Fund ... ..	...	100 0 0	Cash in Hands of Editors	...	2 19 8
Cheeseman Fund ... ..	...	100 0 0	£200 4% Consols @ £115	...	230 0 0
			£170 16s. 9d. 4½% Conversion @ £109	185 0 0	
			£100 3½% Conversion @ par	...	100 0 0
			£100 3½% War Loan @ par	...	100 0 0
				£ s. d.	
			Subscriptions unpaid	79 6 4	
			Written off doubtful	29 6 4	
					50 0 0
Balance of Assets over Liabilities	...	166 9 2			
		<u>£771 9 2</u>			<u>£771 9 2</u>

S. D. PERSY FISHER,
Hon. Treasurer.

Audited and found correct,
3rd November, 1936.
JOHN R. DIBB }
W. D. HINCKS } *Hon. Auditors.*

CORRECTION TO THE Y.N.U. ANNUAL REPORT

THE Secretary reports that through an unfortunate oversight the name of Ald. A. Hirst, of Huddersfield, is omitted from the list of members of the Wild Birds and Eggs Protection Acts Committee. It should be added now, following his two years of office as President of the Zoology Section.

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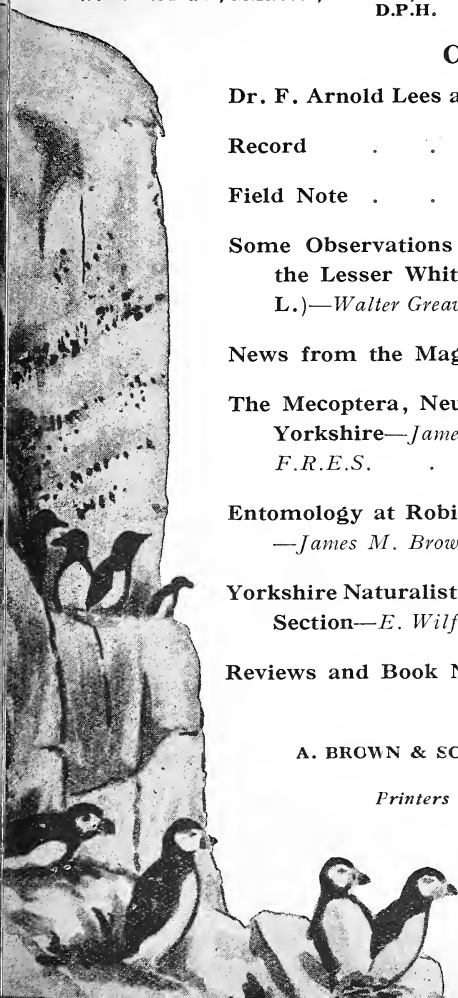
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DR. F. ARNOLD LEES AND THE FLORA OF YORKSHIRE

THE late Dr. F. A. Lees will be well known to all systematic botanists for his great work entitled *West Yorkshire*. For many years prior to his death Dr. Lees accumulated a large quantity of records and material with a view to the publication of a supplement to the Floras of all three Ridings. It was the desire of the author that the Yorkshire Naturalists' Union should publish this supplement, and now, after a long delay due to financial difficulties, the way has been cleared for the work to commence. The Committee of the Yorkshire Naturalists' Union has decided to publish a bi-monthly supplement to *The Naturalist* in which all Dr. Lees' new records will be included. It will not be possible to publish the work *in extenso*, as this would mean a book as large as the author's *West Yorkshire*. The matter is being judiciously edited by the Yorkshire Naturalists' Union Secretary, Mr. C. A. Cheetham, who has the assistance of Dr. W. A. Sledge and other well-known Yorkshire botanists. The first instalment of this supplementary Flora of Yorkshire will appear in the May issue of *The Naturalist*, the price of which will remain unchanged. When the whole of the work has appeared it will be reprinted in book form and marketed by the publishers of *The Naturalist*. As it is now many years since the death of Dr. Lees, advantage will be taken to bring the records up to date as far as possible. All records, notes and comments relating to this publication should be sent direct to Mr. C. A. Cheetham, Austwick, Lancaster.

RECORD

PTERODACTYL REMAINS IN YORKSHIRE

MESSRS. C. W. and E. V. Wright have recently shown me some remains of Pterodactyl in the Yorkshire Chalk which seem to be new records for the North of England. These large flying lizards are known in the Lias of the South of England and Whitby, but the Yorkshire Chalk examples are of smaller species, though are quite identifiable as both bones and teeth are represented. The specimens have been identified by Dr. W. E. Swinton, of the British Museum (Natural History) as belonging to the family *Ornithocheiridae*. From the Red Chalk of Speeton they are four jaws and odd bones; from Elloughton Dale (*H. planus* Zone.), one jaw. As these jaws are only between one and two inches in length, they naturally belong to a small species. The fact that the bones are hollow first gave a clue as to the identification, and Messrs. Wright are to be congratulated in making this valuable addition to our knowledge of the fauna of the Yorkshire cretaceous rocks. The specimens can be seen in the Hull Museum.—T.S.

FIELD NOTE

Red-Necked Grebe shot near Hawes.—About the middle of February a Red-necked Grebe was shot near Hawes. The bird was feeding in some marshy ground called Appersett Bottoms. After it had been shot it was sent by Mr. Mudd, of Hawes, to the Dorman Memorial Museum at Middlesbrough for identification. The Curator wrote back giving the name of the bird, and also an expression deprecating the shooting of strange birds and rare visitants such as the one in question.—J.P.U.

REVIEW

An Introduction to Comparative Biochemistry, by E. Baldwin, pp. 112, 11 text figures. Cambridge University Press, 5/- net. To most biologists, biochemistry represents a somewhat specialised and unfamiliar field to be approached with caution. Comparative biochemistry, in particular, is almost a new science, and the value of a simply-written book in this field is very considerable. Quite briefly, however, the underlying idea of this book is one of great general interest to biologists. It is an attempt to show how, when animals evolved and when they passed from aquatic to terrestrial habitats, their fundamental life processes progressed in parallel with the changes in their habits, structures and environments. While some of the detailed sections of the work involve a knowledge of chemistry, the fundamental principles are capable of being followed by any biologist. Thus, although this is primarily a work for the student or undergraduate, it is also one of quite general interest.

SOME OBSERVATIONS ON THE STATUS AND SONG OF THE LESSER WHITETHROAT (*SYLVIA CURRUCA CURRUCA* L.).

WALTER GREAVES

IN the following article an attempt is made to summarise and discuss observations on the Lesser Whitethroat which have been made in the parish of Halifax in 1935 and 1936.

In June, 1934, Mr. H. Stansfield observed a Lesser White-throat (*Sylvia curruca curruca* L.) singing by the side of the main road at Brearley, near Mytholmroyd, five miles west of Halifax, and as no Lesser Whitethroats had been recorded for the parish of Halifax for a number of years the occurrence at once suggested the possibility that the species had been overlooked in previous years.

It was too late that season to try to find the bird in other local places, but in the middle of May, 1935, we together picked out a couple of singing birds in Brearley Wood, some little distance from the place at which the 1934 bird was seen. About the same time, at Copley, some miles to the east, I found three more birds singing within a distance of 200 yards of each other. Before the season was over, Lesser White-throats had been heard and seen in several other places.

The observations were continued in 1936, with still more remarkable results, Lesser Whitethroats being found at many points between Copley and Mytholmroyd, along the valley of the Calder, and again—as might be expected—after arriving at Hebden Bridge, along the banks of the Hebden tributary, the best of all the bird haunts in the parish of Halifax. A couple of years of close attention to the Lesser Whitethroat have proved conclusively to us that it is a much more abundant bird in this extensive parish—a natural geographical division in the eastern slopes of the Pennine Chain—than was suspected.¹

The Halifax parish Lesser Whitethroats were shown to seven other individuals, who were all agreed on one point; the point which has inspired this account, *i.e.* that the song of the Lesser Whitethroat bears a strong resemblance to that of the Willow Warbler (*Phylloscopus trochilus trochilus* L.), and that actually the two songs are not readily distinguishable.

¹ I once remember reading in a popular article in a magazine, on which I have been unable to place my hands, a statement that the dominant song of a particular woodland in Spring was that of the Lesser Whitethroat. When 'one bird ceased another began, making the song sound continuous.' I thought at the time that it was a good account of a well-known trait of the Willow Warbler, but in the light of the Halifax findings I now acknowledge its accuracy.

This applies to all Lesser Whitethroats, but to some in greater degree than to others.

Some writers have compared the song with that of the Cirl Bunting, a bird not found in the parish, others with that of the Chaffinch, and it was suggested to me by a Yorkshire ornithologist that it was not unlike that of the Yellow Hammer. We have failed to find the slightest resemblance.

After considerable reflection, I am confidently of the opinion that the Lesser Whitethroat is not a recent acquisition to the summer avifauna of Halifax, but has been present each year and overlooked. Certain circumstances known only to myself have helped me to reach that conclusion. In the first place it has been overlooked because of not being specifically sought, and in the second place because its song has been accepted without question as being that of the Willow Warbler. My colleagues and myself suspect that the same causes may have operated with similar results in other parts of the country, where the Lesser Whitethroat has been up to the present considered to be rare or completely absent. The only suitable place outside the parish which I visited in 1936 was Coniston, and I heard the bird there, while my colleagues have recorded it in a number of other districts which they have visited. Each one of the numerous Lesser Whitethroats recorded by myself in 1935 and 1936 was ultimately seen, though the bird was invariably found first by its song.

The Lesser Whitethroat was apparently known to the older ornithologists in the villages round Halifax, for in the eighteen-sixties and 'seventies the dates of its occurrences in different years are to be found in newspaper paragraphs recording the proceedings of a number of natural history societies which have long since gone out of existence. Indeed the earliest recorded arrival in the county, says the *Birds of Yorkshire*, was at Halifax, where 'one was noted on April 17' (year not stated). Also 'it breeds regularly near Halifax.' J. E. Cunningham wrote in the *Halifax Naturalist*, that he had frequently met with the Lesser Whitethroat at the bottom of Norland Clough. At the western end, in the Hebden Bridge district, I have never heard the bird mentioned, although Thomas Allis, whose first list of Yorkshire birds is printed in extenso in *Birds of Yorkshire*, wrote of it 'Met with near . . . and Hebden Bridge,' a statement repeated by the Rev. F. O. Morris in his book on birds. In a *List of the Vertebrate Fauna of Hebden Bridge and District*, compiled and printed in 1910, the only mention I was able to make of the bird was an extract from *Birds of Lancashire*, that 'the Rev. J. E. Palmer observed a specimen at Todmorden in the Spring of 1874,' and the two previous references.

In discussing the possible absence of the Lesser Whitethroat from the environs of Hebden Bridge in 1910, the late Mr. T. A. Coward said to me, 'I think you are missing it simply—as we did for years—through inexperience of the note.' I was as certain that he was wrong at that time as I am sure now that he was right. But even Mr. Coward did not say, nor does he suggest in his books, that the Lesser Whitethroat and the Willow Warbler can possibly be mistaken for one another when singing.

The observations made round Halifax show that a large proportion of the volume of the song believed to be sung by Willow Warblers is in reality contributed by Lesser Whitethroats.

Most text books go to considerable pains to mark the differences in appearance of the Common and the Lesser Whitethroats, but I suggest that there is far less likelihood of confusion between these two than there is between the Lesser Whitethroat and the Willow Warbler. Yet few writers, so far as my knowledge of them goes, have been so candid as the author of our county monograph, who does point out that the Lesser Whitethroat 'is confused with other small birds such as the Chiff-chaff.' This means of course when the birds are silent.

The two Whitethroats, in this parish at least, do not as a rule favour the same sort of ground. When the two are found together it is generally the Lesser which has encroached on Common Whitethroats' ground. The Lesser Whitethroat here is often found on ground to which the Common Whitethroat is a stranger. The Lesser Whitethroat almost seems to be a smaller edition of the Garden Warbler, and usually frequents similar places. While it is true that the difference between a Willow Warbler and a Lesser Whitethroat is obvious when the birds are seen well, it is difficult to distinguish between them when they are observed less critically, either through being too far away, or in an unfavourable position to the light. It has been noticed that Lesser Whitethroats usually sing from a higher perch than the Willow Warblers. They sometimes take up a position on the topmost twig of the very tallest tree they can find, a post Willow Warblers never occupy. In three different 'territories' Lesser Whitethroats showed a strong affection for telegraph wires, and sang their song from them over and over again. On the whole they are not nearly so active as Willow Warblers.

Any attempt—on my part at least—to translate the song of a bird into words, or to describe it in musical terms, would be futile. The suggestion made is that something tangible is gained if it is remembered that it is the 'voice' or 'tone' in the songs of the Lesser Whitethroat and the Willow

Warbler that are indistinguishable, and not the rhythm or the phraseology, which is admittedly different. For instance, the two Thrushes have similar 'voices' but sing different songs, while Whinchat, Redstart, and Wheatear have also 'voices' much alike, but sing differently. The Lesser Whitethroat's and Willow Warbler's voices are of the same sweet, soft tone, and no other woodland bird has a voice in the least like them. The *full song* of the Lesser Whitethroat is distinctly longer than the Willow Warbler's. That is always a reliable guide when present, but it is far from constant. In the song of some Lesser Whitethroats is a phrase which sounds like 'witter witter,' and it is never heard in the song of the Willow Warbler.

This article might have been written in 1935, but it was decided to postpone it for a year. It has been kept back until now in order that it might not be lost or forgotten when the time arrives for putting the conclusions reached here to the test elsewhere. The summer birds will shortly be coming, so observations can be started at once. An appeal is made for the ultimate publication of these, and the results are awaited with interest.

If the experiences of the observers making notes in other districts correspond with ours it means that many days of patient careful watching will be required of them, and they will be surprised, if they enter into the matter with unbiassed views, with the number of doubts that will arise before the final satisfaction experienced from having proved a thing is obtained.

If a word of advice is admissible it is strongly urged that no bird believed to be a Willow Warbler by reason of its song, however strong the conviction, should be accepted as a Willow Warbler until it is also *seen*. The observer who disregards this, and there is always a great temptation to do so, is almost sure to go wrong.

It is my view that if observations on the lines indicated are undertaken in other districts in the county, or the Riding, the Lesser Whitethroat will be found to be something totally different to the 'rare, thinly distributed bird' which it has been believed to be hitherto.

NEWS FROM THE MAGAZINES

The Entomologist's Record for February contains 'Notes on Staudinger's *Erebia æthiops* var. *æthiopella* and a recently discovered analogous form,' by B. C. S. Warren; 'Cornish Notes, 1936,' by C. Nicholson; Notes on Collecting; 'Current Notes'; 'Reviews'; 'Obituary. Rev. C. R. N. Burrows'; and supplements, 'The British Noctuae and their varieties,' by H. J. Turner, and 'Butterfly races of Macedonia,' by R. Verity.

THE MECOPTERA, NEUROPTERA AND MEGALOPTERA OF YORKSHIRE

JAMES M. BROWN, B.Sc., F.L.S., F.R.E.S.

ALTHOUGH the insects belonging to the groups here treated are not perhaps very closely related to each other, it is convenient to deal with them together in one paper. Notwithstanding the fact that there have been few entomologists in Yorkshire specially interested in the Neuroptera, we have a considerable amount of information regarding the distribution of these insects in the county, and the time seems suitable for summarising this information.

The foundation of our local knowledge was laid by the late G. T. Porritt who, in addition to numerous records published in *The Naturalist* during the forty years between 1883 and 1923, prepared two county lists, the first appearing in *The Naturalist* (1897, p. 117-120) in which 30 species were listed, and the second in the *Victoria County History* (1907) containing references to 32 species. These records I have classified in the present paper, and have added all the later captures that have come to my knowledge, whether my own or those of fellow workers. Most of the captures assigned to the Rev. C. D. Ash and to H. Maxwell Stuart were named and recorded by G. T. Porritt. For other recent additions I have to thank Dr. W. J. Fordham for a list of his unpublished records, and Messrs. J. Wood, W. D. Hincks and H. Britten (Jnr.) for specimens for determination. Notices of a good proportion of my own records have appeared in the Reports or the Field Meetings of the Y.N.U. during the last few years.

The excellent Bibliography prepared by Dr. Fordham (*Trans. Soc. Brit. Entomol.*, Oct., 1935), of entomological articles and notes appearing in *The Naturalist* up to 1930, has been of great use in hunting up previous records.

The present paper contains references to 45 of the 63 British species, several of those not known for the county are excessively rare in Britain and are hardly likely to occur with us, but there are still blanks which further field work will no doubt gradually fill up.

(The initials given after the localities and dates in the list that follows refer in most cases to the entomologists already mentioned.)

SPECIES RECORDED.

MEGALOPTERA.

FAMILY: SIALIDAE (ALDER-FLIES).

Both species of Alder-flies are represented in the county, and both are plentiful about stream-sides, the larvæ living

beneath submerged stones where the stream-bed is sandy or muddy. The larvæ are carnivorous.

1. *Sialis flavilatera* L. (*lutaria* L.).

This is the commoner species and probably occurs more plentifully than our records show.

V.C. 61. Bubwith, 6/16, 5/18, Escrick, 1917, Brighton (W.J.F.).

V.C. 62. Castle Howard (G.T.P.).

V.C. 63. Huddersfield, Wakefield, Doncaster (G.T.P.). Edlington Woods, 5/20 (W.J.F.).

V.C. 64. Fountains Abbey, 6/34 (W.D.H. and J.R.D.). Helwith Moss, 6/30 (J.M.B.).

2. *Sialis fuliginosa* Pict.

V.C. 61. N. Grimston, 6/02, Hornsea, 6/08 (G.T.P.). Barmby Moor, 5/29 (W.J.F.).

V.C. 62. Castle Howard, Wykeham (nr. Scarborough), 6/01 (G.T.P.).

V.C. 63. Holmfirth, 6/89, Dunford Bridge, 7/92, Huddersfield, Meltham, 6/22, Skelmanthorpe (G.T.P.). Ecclesall Woods (Sheffield), 6/35 (J.M.B.).

V.C. 64. Grassington, 6/91 (G.T.P.).

V.C. 65. Dent, 6/33 (J.M.B.).

FAMILY: RAPHIDIIDÆ (SNAKE-FLIES).

The Snake-flies are much less common and more local. They are woodland insects, the larvæ living under bark, and like those of *Sialis*, are carnivorous. Two of the four British species have been recorded.

3. *Raphidia notata* Fab.

V.C. 63. Wakefield (G.T.P.).

V.C. 64. Bishop Wood (Selby), York (G.T.P.).

4. *Raphidia xanthostigma* Schum.

This is the commoner species.

V.C. 61. Skipwith (G.T.P.). Everingham, 7/23 (C. Ash), Melbourne, 6/19 (W.J.F.). Everingham, 7/23 (H. M. Stuart), Allerthorpe, 6/27 (W.D.H.), Skipwith, 6/22 (J.M.B.).

V.C. 62. Castle Howard (G.T.P.).

V.C. 63. Wharnccliffe, Doncaster (G.T.P.). 6/23. Ecclesall Woods (Sheffield), 7/23, Ryecroft Glen (Sheffield), 6/23 (J.M.B.).

NEUROPTERA (PLANIPENNIA).

FAMILY: CONIOPTERYGIDÆ (DUSTY-WING-FLIES).

Small, delicate insects, found usually in numbers among the foliage of various trees. The larvæ are carnivorous, feeding on aphids, mites, etc.

5. *Conwentzia psociformis* Curt.

This species is probably widely distributed, but I have few actual records.

V.C. 62. Cleveland (J.W.H. Harrison).

V.C. 63. Keighley, 8/30 (J.W.). Ecclesall Woods, 6/35 (J.M.B.).

V.C. 64. Dent, 6/33 (J.M.B.).

6. *Coniopteryx tineiformis* Curt.

A common insect, found on holly, oak and other trees.

V.C. 61. Allerthorpe Common, 6/30 (J.M.B.).

- V.C. 62. Cleveland (J.W.H.H.). Buttercrambe Woods, 6/28, Sandburn Woods, 6/29, Osmotherley, 8/31, Fyling-hall, 6/36 (J.M.B.).
 V.C. 63. Cawthorne, 7/28, Wharnccliffe, 6/28, Ecclesall Woods, 6/28 (J.M.B.).
 V.C. 64. Grassington, 6/28, Malham, 7/35 (J.M.B.).
 V.C. 65. Whitcliffe Woods (Richmond), 8/28, Dent, 6/33 (J.M.B.).

7. *Coniopteryx pygmaea* End.

A much less common species than the last, and more local. It resembles that species very closely, but may readily be distinguished by an examination of the genitalia. It appears to be confined to Conifers. I have only two records.

V.C. 62. Buttercrambe Woods, 6/28 (J.M.B.).

V.C. 64. Malham, 7/35 (J.M.B.).

8. *Semidalis aleyrodiformis* Steph.

A fairly common species found among the foliage of various trees.

V.C. 62. Cleveland (J.W.H.H.).

V.C. 63. Huddersfield, 6/18, Martin Beck, 6/20 (G.T.P.).
 Ryhill, 6/32, Cawthorne, 7/28, Ecclesall Woods, 6/28, 6/32, 6/35, 6/36 (J.M.B.).

V.C. 64. Winterburn, 8/32 (J.M.B.).

f. *curtisiana* End.

This form differs slightly from the type in wing-venation, and frequently occurs with it.

V.C. 63. Cawthorne, 7/28; Ecclesall Woods, 6/28, 7/29 (J.M.B.).

V.C. 64. Winterburn, 8/32 (J.M.B.).

FAMILY OSMYLIDÆ (SPOTTED LACEWINGS).

9. *Osmylus fulvicephalus* Scop. (*chrysops* Scop.).

This fine species of Lacewing is a woodland insect, hiding by day and flying rather heavily in the evenings in the neighbourhood of streams. Its larva is semi-aquatic, being found beneath stones bordering the streams. I have taken well-grown larvæ in January and March. The species has been taken in three localities in the county.

V.C. 62. Castle Howard, 8/9/96 (G.T.P., *E.M.M.*, 1896, p. 278);
 Forge Valley, 26/6/32 (W. J. Carter) (reported by
 G. B. Walsh, *Naturalist*, 1932, p. 278).

V.C. 63. Ecclesall Woods (Sheffield), 20/6/35, 1/6/36, 3/6/36
 (J.M.B., *E.M.M.*, 1935, p. 226, and *Naturalist*,
 1937, p. 4).

FAMILY SISYRIDÆ (SPONGE-FLIES).

These insects, whose larvæ live parasitically within freshwater sponges, seem scarce with us. Two of the three British species have been recorded.

10. *Sisyra fuscata* Fabr.

V.C. 62. Castle Howard (G.T.P.).

V.C. 64. Boston Spa (F. G. Binnie, *Naturalist*, 1897, p. 349);
 R. Skell (Ripon), 23/6/34 (J.W.).

One specimen of this interesting species was sent to me for determination after the meeting of the Entomological Section at Ripon (1934).

11. *Sisyra dalii* McL.

A rare species occurring by stream sides in July and August. It has been recorded once.

V.C. 64. Boston Spa and Tadcaster (F. G. Binnie, *Naturalist*,
 1897, p. 349).

FAMILY HEMEROBIIDÆ (BROWN LACEWING-FLIES).

The Brown Lacewings are woodland species, sometimes associated with definite trees, over the branches of which the larvæ roam in search of small insects, such as aphids, and other types of small prey. The adults can be beaten from the foliage, and are mostly on the wing in the evenings.

12. *Eumicromus paganus* L.
Common and widely distributed.
V.C. 61. Barmby Moor, 8/28, Allerthorpe, 5/27, 7/31 (W.J.F.).
V.C. 62. Fylinghall, 6/29 (W.J.F.).
V.C. 63. Huddersfield, Wharnccliffe, Hampole, 7/08 (G.T.P.).
Keighley, 7/32 (J.W.). Ecclesall Woods, 6/29,
6/30 (J.M.B.).
V.C. 64. Colt Park Wood (Horton-in-Ribblesdale), 6/30 (J.M.B.).
13. *Hemerobius humulinus* L.
Plentiful and widely distributed.
V.C. 61. Market Weighton, 7/30, Allerthorpe Common, 6/30
(J.M.B.).
V.C. 62. Saltburn, 8/86 (G.T.P.), Mulgrave Woods, 8/36
(H.B.), Egton Bridge, 8/30, Pickering, 5/29
(J.M.B.).
V.C. 63. Dodworth, Huddersfield, Mirfield, Holmfirth, 6/89
(G.T.P.), Keighley, 6/34 (J.W.). Wharnccliffe,
6/20 (W.J.F.). Ecclesall Woods, 7/29, 5/30,
Wharnccliffe Woods, 6/28, Cawthorne, 7/28 (J.M.B.).
V.C. 64. Selby (G.T.P.). Ripon, 8/35, Winterburn, 8/32;
Arnccliffe, 6/28 (J.M.B.).
V.C. 65. Bainbridge, 5/34, Semerdale, 5/34 (J.M.B.).
14. *Hemerobius simulans* Walk. (*orotypus* Wallengr.).
Not a very plentiful species with us.
V.C. 62. Guisborough, 8/06, Kildale, 8/13 (G.T.P.). Hoving-
ham, 8/35 (J.M.B.).
V.C. 63. Harden Clough, 9/11, Dunford Bridge (G.T.P.).
V.C. 64. Ingleton, 6/11, Grassington, 6/91, 9/07 (G.T.P.).
Ripon, 8/33 (J.M.B.).
15. *Hemerobius stigma* Steph.
A distinctive species found active all the year, and apparently
confined to Conifers.
V.C. 61. Skipwith, 8/16, Allerthorpe, 6/21 (W.J.F.). Market
Weighton, 7/30, Allerthorpe, 8/37 (J.M.B.).
V.C. 62. Kildale, 8/13 (G.T.P.). Wragby Wood (Whitby),
6/36 (H.B.). Sandburn Wood, 6/29, Easby Moor,
4/28 (J.M.B.).
V.C. 63. Huddersfield, Dunford Bridge, Thorne Moor, Wharn-
cliffe, 9/03 (G.T.P.). Ecclesall Woods, 7/35
(J.M.B.).
V.C. 65. Aske, 8/28, Dent, 6/33, Semerdale, 5/34 (J.M.B.).
16. *Hemerobius atrifrons* McL.
This species which also occurs on Conifers, appears to be rather
rare in the county.
V.C. 61. Brough, 5/01 (G.T.P.).
V.C. 62. Kildale, 8/13, Sandburn (G.T.P.).
V.C. 63. Thorne, Wharnccliffe, 9/03, Harden Clough, 8/11 (G.T.P.).
V.C. 64. Masham (G.T.P.). Tadcaster (F. G. Binnie). Winter-
burn, 8/32 (J.M.B.).
17. *Hemerobius contumax* Tjeder.
This species has recently been identified with the *H. limbatellus* of
British authors, and described by F. J. Killington (*Trans. Soc.*

Brit. Entomol., 1934). There are apparently only three British records, of which the Yorkshire one is somewhat doubtful, as the specimen has unfortunately been misplaced.

V.C. 62. Buttercrambe Woods, 6/28 (J.M.B.). (Recorded as *H. limbatellus*, *Naturalist*, 1928, p. 283).

18. *Hemerobius nitidulus* Fab.

A common species occurring on Conifers.

V.C. 61. Skipworth, 8/16 (W.J.F.). Allerthorpe, 6/30, Skipwith, 7/33 (J.M.B.).

V.C. 62. Sandburn (G.T.P.). Buttercrambe Woods, 6/28, Sandburn Woods, 6/29, Mulgrave Woods, 9/36 (J.M.B.).

V.C. 63. Dunford Bridge, Huddersfield, Wharnccliffe, 9/03 (G.T.P.). Ecclesall Woods, 7/28, Deffer Wood, 7/26, Cawthorne, 7/28 (J.M.B.).

19. *Hemerobius micans* Oliv.

A common and widely distributed species, found on various deciduous trees.

V.C. 62. Kildale, 8/13, Saltburn, 8/86, Castle Howard, 9/92 (G.T.P.).

V.C. 63. Wakefield, Huddersfield, Dunford Bridge, Wharnccliffe, 9/03 (G.T.P.). Keighley, 6/35 (J.W.). Ecclesall Woods, 7/29, 6/28, 6/35, Wharnccliffe Woods, 6/28 (J.M.B.).

V.C. 64. Horsforth, Malham, 6/10, Clapham, 9/08, Burnsall, 6/13 (G.T.P.). Ripon, 6/34 (J.W.).

V.C. 65. Tanfield, 6/12 (G.T.P.). Sedburgh, 5/32, Semerdale, 5/34, Bainbridge, 5/34 (J.M.B.).

20. *Hemerobius lutescens* Fab.

Another widely distributed species found in deciduous woods.

V.C. 61. Hornsea, 6/08 (G.T.P.). Allerthorpe, 6/21 (W.J.F.).

V.C. 62. Guisborough, 8/06, Kildale, 8/13 (G.T.P.). Osmotherley, 8/31, Sandsend, 9/36, Robin Hood's Bay, 6/36 (J.M.B.).

V.C. 63. Wharnccliffe, 9/03 (G.T.P.). Wharnccliffe, 6/20 (W.J.F.). Keighley, 7/34, Newsholme Dene, 7/32 (J.W.). Harden Clough, 9/11 (G.T.P.). Ryhill, 6/32, Ecclesall Woods, 7/34, 6/35, 7/36, Deffer Wood, 7/26 (J.M.B.).

V.C. 64. Malham, 6/10, Clapham, 9/08 (G.T.P.). Bishop Wood (Selby), 7/31, Winterburn, 8/32, Ripon, 8/33 (J.M.B.).

V.C. 65. Aske, 8/28, Dent, 6/33 (J.M.B.).

21. *Hemerobius marginatus* Steph.

This is a northern species, and was described as rather rare by Mr. Porritt, but I think it will be found to be more plentiful than he supposed.

V.C. 62. Castle Howard, 9/92, Kildare, 8/13 (G.T.P.). Mulgrave Woods, 8/36 (H.B.). Helmsley, 9/35, Fylinghall, 6/36, Mulgrave Woods, 9/36 (J.M.B.).

V.C. 63. Keighley, 9/35 (J.W.).

V.C. 64. Arncliffe, 8/07, Grassington, 10/05, Askham Bogs (G.T.P.). Ripon, 8/33, Malham, 7/35 (J.M.B.).

V.C. 65. Semerdale, 9/34, Hawes, 9/34 (J.M.B.).

22. *Boriomyia betulina* Strm. (*nervosa* Fabr.).

Fairly widely distributed but not very plentiful.

V.C. 61. Allerthorpe Common, 7/32 (J.W.).

V.C. 62. Sandburn (G.T.P.). Sandburn Woods, 6/29 (J.M.B.).

V.C. 63. Farnley Tyas, 8/14 (G.T.P.). Keighley, 7/34, 6/36 (J.W.). Ryhill, 6/32, Ecclesall Woods, 7/29 (J.M.B.).

V.C. 64. Askham Bogs (G.T.P.). Tadcaster (F. G. Binnie).
Hanlith (Malham), 8/33, Ripon, 8/33 (J.M.B.).

V.C. 65. Semerdale, 5/34 (J.M.B.).

23. *Borionymia subnebulosa* Steph.

Rather more common than the last.

V.C. 61. Hornsea, 6/08 (G.T.P.). E. Cottingwith, 6/16, Barmby Moor, 5/29 (W.J.F.).

V.C. 62. Kildale, 8/13 (G.T.P.).

V.C. 63. Harden Clough, 9/11, Dunford Bridge, Wharnccliffe, 9/03, Doncaster, Barnsley (G.T.P.). Keighley, 5/34, 7/32 (J.W.). Shelley, 8/19 (H. D. Smart). Marr, 7/29, Ryhill, 6/32, Ecclesall Woods, 9/32 (J.M.B.).

V.C. 64. Malham, 6/10, Clapham, 9/08 (G.T.P.). Colt Park Wood, 6/30 (J.M.B.).

V.C. 65. Bainbridge, 5/34 (J.M.B.).

24. *Wesmaelius concinnus* Steph.

A species associated with Conifers, and fairly widely distributed, but not plentiful.

V.C. 61. Skipwith, -/99 (C. D. Ash). Everingham, 7/22 (H. M. Stuart). Allerthorpe Common, 6/30 (J.M.B.).

V.C. 62. Warthill, 7/87 (G.T.P.). Sandburn Woods, 6/29 (J.M.B.).

V.C. 63. Sheffield (G.T.P.). Saxton, -/19 (C. D. Ash).

V.C. 64. York (G.T.P.).

25. *Wesmaelius quadrifasciatus* Reut.

Apparently rather rare with us.

V.C. 61. Skipwith (G.T.P.). Everingham, 7/22 (H. M. Stuart).

V.C. 62. Guisborough, 8/06, Kildale, 8/13, Sledmere (G.T.P.). Buttercrambe Woods, 6/28 (J.M.B.).

V.C. 63. Sheffield, 6/05, 6/06, 7/08 (G.T.P.). Ecclesall Woods (Sheffield), 6/34 (J.M.B.).

26. *Symphorobius elegans* Steph.

The members of the genus *Symphorobius* have seldom been taken in the county, *elegans* more frequently than the other two.

V.C. 62. Mulgrave Woods, 3/8/36 (H.B.).

V.C. 63. Keighley, 9/7/35, 12/7/34 (J.W.). Ecclesall Woods, 10/7/33 (J.M.B.).

27. *Symphorobius pygmaeus* Ramb.

V.C. 63. Wharnccliffe Woods, 7/8/28 (J.M.B.).

28. *Symphorobius fuscescens* Wallengr. (*inconspicuus* McL.).

V.C. 61. Allerthorpe Common, 21/6/30 (J.M.B.) (*Naturalist*, 1930, p. 429).

29. *Drepanepteryx phalaenoides* L.

Our single county record for this rare northern species dates from 1886, when Miss Hutchinson obtained a single specimen by beating sallows (*E.M.M.*, 1890, p. 52).

V.C. 65. Deepdale (Teesdale), 28/8/86 (Miss Hutchinson).

FAMILY CHRYSOPIDÆ (GREEN LACEWING-FLIES).

These are also woodland insects, the larvæ having similar habits to those of *Hemerobius*. We possess twelve of the fourteen British species.

30. *Chrysopa flava* Scop.

This is one of the largest species. It is fairly common in deciduous woods.

V.C. 61. Bubwith, Melbourne, 7/16, 8/17, 6/19 (W.J.F.). Allerthorpe Common, 8/36 (J.M.B.).

V.C. 62. Saltburn, 8/86, Kildale, 8/13, Castle Howard (G.T.P.). Helmsley, 9/35 (J.M.B.).

- V.C. 63. Bishop Wood, Huddersfield, Doncaster (G.T.P.).
Keighley, 6/34 (J.W.). Wharnccliffe, 6/30 (W.J.F.).
Cawthorne, 7/28, Deffer Wood, 7/28, Ecclesall Woods,
7/29, 6/35, Wharnccliffe Woods, 7/31 (J.M.B.).
- V.C. 64. Fountains Abbey, 6/34 (W.D.H. and J.R.D.). R.
Skell (Ripon), 6/34 (J.W.). Malham, 7/35
(J.M.B.).
31. *Chrysopa vittata* Wesmael.
Another large species found in deciduous woods, and fairly plentiful.
- V.C. 62. Castle Howard, Scarborough, Sandburn (G.T.P.).
Hovingham, 8/35, Fylinghall, 6/36, Sandburn,
6/29 (J.M.B.).
- V.C. 63. Bishop Wood, Doncaster, Huddersfield (G.T.P.).
Keighley, 7/32 (J.W.). Ecclesall Woods, 6/32,
6/35 (J.M.B.).
- V.C. 64. Ripon, 8/33, Grassington, 6/28 (J.M.B.).
32. *Chrysopa ciliata* Wesm. (*alba* L.).
Also occurring in deciduous woods, and quite plentiful.
- V.C. 61. N. Grimston, 6/02 (G.T.P.). Bubwith, Barmby Moor,
8/19 (W.J.F.). Everingham, 4/33 (H. M. Stuart).
- V.C. 62. Castle Howard, Scarborough (G.T.P.). Buttercrambe
Woods, 6/28, Sandburn Woods, 6/29, Hovingham,
8/35 (J.M.B.).
- V.C. 63. Doncaster, Huddersfield (G.T.P.). Cawthorne, 7/28,
Ecclesall Woods, 6/35, 7/36 (J.M.B.).
- V.C. 64. Hambleton (nr. Selby) (G.T.P.). Tadcaster (F. G.
Binnie). Fountains Abbey, 6/34 (W.D.H. and
J.R.D.). R. Skell, 6/34 (J.W.).
33. *Chrysopa flavifrons* Brauer.
This appears to be one of our rarer species.
- V.C. 61. Skipwith (G.T.P.).
- V.C. 62. Castle Howard, 9/92, Sandburn, Kildale, 8/13 (G.T.P.).
- V.C. 63. Doncaster (G.T.P.). Marr, 7/29 (J.M.B.).
- V.C. 64. Selby (G.T.P.). Bishop Wood, 7/31 (J.M.B.).
34. *Chrysopa albolineata* Kill. (*tenella* Schn.).
Another deciduous wood insect and widely distributed and plentiful.
- V.C. 61. N. Grimston, 6/02 (G.T.P.). Skipwith, -/97 (C. D.
Ash). Everingham, 7/22 (H. M. Stuart). Aller-
thorpe, 8/36 (J.M.B.).
- V.C. 62. Castle Howard, Saltburn, 8/86, Sandburn (G.T.P.).
Mulgrave Woods, 8/36 (H.B.). Fylinghall, 6/36,
Mulgrave Woods, 9/36 (J.M.B.).
- V.C. 63. Huddersfield, -/18, Thorne, Wharnccliffe, Martin Beck,
6/20, Hampole, 7/08 (G. T. P.). Keighley, 6/34
(J.W.). Wharnccliffe, 6/28, Marr, 7/29, Deffer
Wood, 7/28, Ecclesall Woods, 6/35, 6/36 (J.M.B.).
- V.C. 64. Bishop Wood, Askham Bogs, 6/22 (G.T.P.). Saxton,
7/07 (C. D. Ash).
- V.C. 65. Tanfield, 6/12 (G.T.P.).
35. *Chrysopa carnea* Steph. (*vulgaris* Schn.).
A species not very common in Yorkshire. It is one of the few
species that hibernate in the imago state, and, as was pointed
out to me by Mr. K. J. Morton, the early date of the Whitby
record points to that individual as a hibernated specimen.
- V.C. 61. Bubwith, 6/15, Frog Hall, 7/29, Barmby Moor, 7/29
(W.J.F.). Allerthorpe Common, 9/35 (J.M.B.).
- V.C. 62. Whitby, 4/36 (H.B.).
- V.C. 63. Huddersfield, 6/94 (G.T.P.). Keighley, 10/35, Shipley
Glen, 8/33 (J.W.).
- V.C. 64. Saxton, -/23 (C. D. Ash).

36. *Chrysopa septempunctata* Wesm.

This is reputed to be a common species, but has rarely been taken in Yorkshire.

V.C. 61. Everingham, 7/22 (H. M. Stuart) (reported by G.T.P. in *The Naturalist*, 1923, p. 91). Barmby Moor, 7/30 (W.J.F.).

37. *Chrysopa ventralis* Curt.

Not very plentiful with us.

V.C. 61. Skipwith (G.T.P.). Everingham, -/25 (C. D. Ash). Frog Hall, 7/27 (W.J.F.). Allerthorpe Common, 8/36 (J.M.B.).

V.C. 62. Sandburn (G.T.P.).

V.C. 63. Martin Beck Wood, 6/20, Thorne (G.T.P.).

f. *prasina* Burm. (*aspersa* Wsm.).

This form with a pale abdomen frequently occurs with the type.

V.C. 61. Skipwith (G.T.P.).

V.C. 62. Sandburn (G.T.P.).

V.C. 63. Thorne (G.T.P.).

V.C. 64. Hambleton (Selby), 6/15 (G.T.P.).

38. *Chrysopa phyllochroma* Wesm.

Not very common, but rather widely distributed and local.

V.C. 61. Skipwith, -/97, Everingham, 7/22 (C.D.A.). Skipwith, -/19, Barmby Moor, 7/30 (W.J.F.). Allerthorpe Common, 6/30, 6/31, Millington, 8/36 (J.M.B.).

V.C. 62. Sandburn Woods, 6/29 (J.M.B.).

V.C. 63. Thorne, 7/91 (G.T.P.).

V.C. 64. Saxton, -/24 (C.D.A.). Bishop Wood (Selby), 7/31 (J.M.B.).

39. *Chrysopa perla* L.

An abundant and widely distributed species.

V.C. 61. Allerthorpe Common, 6/21, 7/28, 7/29, 6/30, 7/30, Frog Hall, 6/29, 6/30, 6/32 (W.J.F.). Allerthorpe, 6/30 (J.M.B.).

V.C. 62. Buttercrambe Woods, 6/28, Sandburn Woods, 6/29, Helmsley, 9/35, Hovingham, 8/35 (J.M.B.).

V.C. 63. Wentworth, 7/21, Wharnccliffe, Dodworth, Martin Beck, 6/20, Huddersfield (G.T.P.). Martin Beck, 6/20, Wharnccliffe, 6/20 (W.J.F.). Keighley, 8/31 (J.W.). Ecclesall Woods, 6/36, Ryhill, 6/32, Wharnccliffe, 6/28 (J.M.B.).

V.C. 64. Hambleton, 6/15 (G.T.P.).

40. *Nathanica* (*Nothochrysa*) *fulviceps* Steph.

This very rare species has one record only.

V.C. 63. Sheffield, -/8/1866 (J. Batty). (Recorded by G.T.P. in *The Naturalist*, 1898, p. 88).

41. *Nathanica capitata* Fabr.

Apparently widely distributed in the county, but almost always taken singly.

V.C. 61. Skipwith, -/97 (C.D.A.). Melbourne, 6/19, Frog Hall, 8/7/29 (W.J.F.).

V.C. 62. Castle Howard, 2/6/92, Sandburn, 6/8/94 (G.T.P.). Fylinghall, -/6/31 (W.J.F.). Fylinghall, 30/6/36 (J.M.B.).

V.C. 63. Newsome, -/95, Green Farm Wood (Doncaster), 6/6/92 (G.T.P.).

V.C. 64. York (G. C. Dennis). Bishop Wood, 17/6/99, 26/5/90 (G.T.P.). Fountains Abbey, 23/6/34 (W.D.H. and J.R.D.).

MECOPTERA.

FAMILY PANORPIDÆ (SCORPION-FLIES).

These are woodland species, flying in the sunshine and resting on low vegetation. The larvæ are voracious, feeding on various other insects (see Hobby and Killington, *Trans. Soc. Brit. Entomol.*, 1934).

42. *Panorpa communis* L.

Both this species and the next are common and widely distributed.

V.C. 61. Allerthorpe Common, 6/26 (W.J.F.).

V.C. 62. Saltburn, Castle Howard (G.T.P.). Buttercrambe Woods, 6/28, Osmotherley, 8/31, Hovingham, 8/35 (J.M.B.).

V.C. 63. Askern, 7/12 (G.T.P.). Edlington Woods, 6/24, Wharnccliffe Woods, 6/20, Ecclesall Woods, 6/35, Birdwell, 6/27 (J.M.B.).

V.C. 64. Thorne (G.T.P.). Tadcaster (F. G. Binnie). Thorner, 6/26 (W.D.H.). Askham Bogs, 5/34 (J.W.). Askham Bogs, 6/25 (J.M.B.).

V.C. 65. Dent, 6/33 (J.M.B.).

43. *Panorpa germanica* L.

Perhaps even more common than the last.

V.C. 61. Allerthorpe, 6/26 (W.J.F.).

V.C. 62. Castle Howard (G.T.P.). Buttercrambe Woods, 6/28, Osmotherley, 8/31, Hovingham, 8/35 (J.M.B.).

V.C. 63. Martin Beck, 6/20, Dodworth, Bradford, Huddersfield, Wharnccliffe, Thorne (G.T.P.). Keighley, 5/34, Shipley Glen, 5/34 (J.W.). Fairburn, 6/34, Ecclesall Woods, 6/35 (J.M.B.).

V.C. 64. Selby (G.T.P.). R. Skell, 6/34 (J.W.). Fountains Abbey, 6/34 (W.D.H. and J.R.D.). Tadcaster (F. G. Binnie). Grassington, 6/27, Malham, 7/35, Colt Park Wood, 6/30 (J.M.B.).

V.C. 65. Dent, 6/33, W. Tanfield, 5/35, Semerdale, 5/34 (J.M.B.).

44. *Panorpa cognata* Ramb.

This much rarer species has been recorded once only in Yorkshire.

V.C. 61. Allerthorpe Common, 8/35 (W. J. Fordham, *The Naturalist*, 1930, p. 194).

FAMILY BOREIDÆ.

A single member of this family occurs in this country.

45. *Boreus hyemalis* L.

This curious insect with rudimentary wings is commonly found in moss during the winter season. It appears to be widely distributed in the country, but is seldom taken. Its distribution in Yorkshire has recently been given by Dr. W. J. Fordham (*The Naturalist*, 1934, p. 105), from whose account the following particulars are taken.

V.C. 61. Allerthorpe Common, 21/11/29 (W.J.F.) (*The Naturalist*, 1930, p. 194).

V.C. 62. Eston Moor (J.W.H.H.) (*Vasculum*, 1915, p. 57). Hay Brow, near Scalby, 6/11/20 (G. B. Walsh) (*The Naturalist*, 1921, p. 16. Oliver's Mount (Scarborough) (G.B.W.) (*The Naturalist*, 1923, p. 90).

V.C. 63. Holling's Hill (between Otley and Shipley), 21/1/34 (L. E. Gallacher) (recorded by W.J.F., *The Naturalist*, 1934, p. 105).

V.C. 64. Smearsett (Austwick), 14/11/20 (C. A. Cheetham) (*The Naturalist*, 1921, p. 16).

ENTOMOLOGY AT ROBIN HOOD'S BAY AND SANDSEND.

JAMES M. BROWN, B.Sc., F.L.S., F.R.E.S.

SOME years ago, as the result of a holiday spent at Sandsend, I was able to contribute an account of the Hemiptera from North-east Yorkshire (*Naturalist*, 1925). Visits during the year (1936) to Robin Hood's Bay in June, and to Sandsend in September, gave a further opportunity of adding to our knowledge of the insects of this area. Attention was not entirely devoted to the Hemiptera, but other orders of insects were included, with the result that a considerable number of species not previously recorded from this part of the county can now be listed. Although the season as a whole was not very favourable for entomology, the weather during the time of these visits was quite good. A considerable amount of sunshine with hardly any interference due to wet weather, made collecting possible during practically the whole stay.

My chief collecting grounds were :

1. ROBIN HOOD'S BAY. Stoupe Brow, a rough area of moorland, with gorse and broom in places.
Near Fylinghall Station, lanes, fields, woodland and stream sides.
Ramsdale, woodland and stream sides, with lanes and moorland beyond.
Maw Wyke, stream sides.
2. SANDSEND. Mulgrave Woods, and banks of East and West-Row Becks.
Skelder Place, wood and heath-land.
Arncliffe Woods, near Egton Bridge.
Runwick, cliffs between here and Port Mulgrave.

In the lists which follow, † refers to new County Records, and * to records not previously published for V.C. 62.

HEMIPTERA.

A good deal of attention was given to this order, and a fair number of species was obtained, especially during the September visit. Most of my material was obtained by beating. Among the species taken were the following :

(a) HETEROPTERA.

Piezodorus lituratus F. This species found on Furze, has been taken more often in V.C. 62 than anywhere else in the county. It occurred at Stoupe Brow, 16/6/36, and 22/9/36, as mature and immature individuals ; at Ramsdale, 24/9/36 ; and at Aislaby, 11/9/36.

Pentatoma rufipes L. This again appears to be more frequent in V.C. 62 than elsewhere. It was taken by Mill Beck, 8/9/36 ; in Mulgrave Woods, 23/9/36 ; and in a garden at Sandsend, 23/9/36.

- Rhacognathus punctatus* L. An immature individual was taken on the trunk of an Elm, Mulgrave Woods, 23/9/36.
- Elasmotethus interstinctus* L. was plentiful, both as adults and nymphs on Birch, Skelder Place, 11/9/36.
- Ischnorhynchus ericæ* Horv. Under Heath, Howdale Moor, 19/6/36.
- Drymus sylvaticus* F. var. *ryei* D. & S. Under Heather, Ramsdale, 27/9/36.
- D. brunneus* Sahlb. Ramsdale, 10/6/36, a single specimen.
- Scolopostethus affinis* Schill. Common, Skelder Place, 11/9/36; and on the remains of the sandhills, Sandsend, 25/9/36.
- S. decoratus* Hahn. Frequent under Heather, Ramsdale, 27/9/36; and Howdale Moor, 16/6/36 and 19/6/36.
- Gastroles ferrugineus* L. On Scots Fir, Mulgrave Woods, 23/9/36.
- Tingis cardui* L. Common on flower-heads of Thistle, Stoupe Brow, 15/6/36; Ramsdale, 10/9/36; and Runswick Bay, 15/9/36.
- Aptus major* Cost. On the sandhills, Sandsend, 20/9/36.
- Dolichonabis limbatus* Dahlb. Ramsdale, 19/9/36; and Runswick, 15/9/36.
- Lyctocoris campestris* F. Stoupe Brow, 24/9/36; and on the sandhills, Sandsend, 20/9/36.
- Temnostethus pusillus* H.S. A small species usually found on old Oaks, but here taken on various trees. Fylinghall (Sycamore), 24/9/36; Sleights (Oak), 17/9/36; Mulgrave Woods (Sycamore), 23/9/36; Skelder Place (Sycamore), 24/9/36.
- Acompocoris pygmaeus* Fall. On Scots Fir, Skelder Place, 11/9/36.
- Microphysa elegantula* Baer. A minute species taken on Oak bark, Hags Wood (Sandsend), 13/9/36.
- Stenodema calcaratum* Fall. and *S. holsatum* F. Both common.
- C. laevigatum* L. Less common, Fylinghall, 10/6/36.
- Monalocoris filicis* L. Common on Bracken.
- Bryocoris pteridis* Fall. Less common, on *Dryopteris*, Fylinghall, 10/6/36.
- Pantilius tunicatus* F. One immature specimen, Fylinghall, 10/9/36. Previously taken in Forge Valley (*Naturalist*, 1924).
- Calocoris ochromelas* Gmel. On Oak, Fylinghall, 19/6/36.
- Phytocoris tiliaë* F. Fylinghall, 8/9/36.
- P. varipes* Boh. Runswick, 15/9/36.
- Lygus viridis* Fall., *L. contaminatus* Fall., and *L. pratensis* L. Common.
- Camptozygum pinastri* Fall. On Scots Fir, Skelder Place, 11/9/36.
- Campyloneura virgula* H.S. This delicate species was plentiful on Oaks, Fylinghall, 7/9/36 and 19/9/36; Beck Hole, 17/9/36; Mulgrave Woods, 12/9/36; Runswick, 15/9/36.
- Cyllocoris flavoquadrimaculatus* DeG. On Oaks, Fylinghall, 26/6/36 and 19/9/36.
- Cyrtorrhinus caricis* Fall. In vegetation by the pool on the cliffs, Runswick, 15/9/36.
- **Orthotylus nassatus* F. One specimen was taken at Fylinghall, 8/9/36. This is an interesting capture, as the only previous record for the county is that of J.E. Mason, for Teesdale (*Naturalist*, 1889, p. 283).
- O. virescens* D. & S. Quite common on Broom, Beck Hole, 17/9/36; Arncliffe Woods, 17/9/36; Aislaby, 11/9/36; Skelder Place, 11/9/36.
- O. ericetorum* Fall. Under Heather, Ramsdale, 24/9/36.
- Malacocoris chlorizans* Fall. Another very delicate species occurring on Hazel, Fylinghall, 8/9/36; Mulgrave Woods, 12/9/36; Runswick Bay, 15/9/36.
- Psallus betuleti* Fall. Fylinghall, 8/9/36.
- P. alnicola* D. & S. Common on Alder, Fylinghall, 8/9/36.
- P. roseus* F. On Sallows, Skelder Place, 11/9/36; Runswick, 15/9/36.
- Plagiognathus chrysanthemi* Wolff. Runswick Bay, 15/9/36.

(b) HOMOPTERA.

- Philaenus spumarius* f. *leucocephalus* Germ. Ramsdale, 27/9/36.
Previously recorded for Mulgrave Woods (*Naturalist*, 1925).
- Ulopa reticulata* Fab. Common under Heather, Ramsdale, 27/9/36.
- Bythoscopus lanio* L. On Oaks, Fylinghall, 8/9/36; Skelder Place, 11/9/36.
- **Idiocerus populi* L. Skelder Place, 11/9/36. Not so common as *I. confusus* Reut.
- Aphrodes flavostriatus* Don. Skelder Place, 11/9/36.
- Eupelix cuspidatus* Fab. In turf, Ramsdale, 24/9/36.
- Jassus mixtus* Fab. In Ivy, Fylinghall, 19/9/36. The only previous record for V.C. 62 is Hovingham. The species is more common later, on tree trunks.
- Thamnotettix splendidulus* Fab. Not very common, Fylinghall, 8/9/36.
- Limotettix nigricornis* J. Sahlb. Fairly plentiful in damp vegetation, but not frequently recorded for V.C. 62. Skelder Place, 11/9/36; and Runswick, 18/9/36.
- Alebra albostriella* Fall. Fylinghall, 10/9/36.
- Dikraneura variata* Hdy. Beneath Heather, Ramsdale, 24/9/36.
- Empoasca smaragdula* Fall. Common, Fylinghall, 8/9/36; Ramsdale, 24/9/36; Skelder Place, 11/9/36.
- Chlorita flavescens* Fab. Ramsdale, 24/9/36; Mulgrave Woods, 12/9/36 and 23/9/36.
- Eupteryx atropunctatus* Goeze, Skelder Place, 11/9/36; Runswick, 15/9/36.
- Typhlocyba tenerrima* H.S. On Hawthorn, Mulgrave Woods, 12/9/36.
- T. nitidula* Fab. Was again plentiful on Elm, Mulgrave Woods, 23/9/36, the only locality in V.C. 62.
- T. geometrica* Schr. Beck Hole, 17/9/36; Fylinghall, 10/9/36.
- †*T. carri* Edw. Fylinghall, 10/9/36. This species was described by Edwards from specimens taken in Notts. (*E.M.M.*, 1914). It has not been previously recorded for Yorks.
- T. crataegi* Dougl. Mulgrave Woods, 23/9/36. On Hawthorn.
- Erythroneura flammigera* Geof. Fairly plentiful, Fylinghall, 8/9/36; Ramsdale, 19/9/36.
- Cixius pilosus* Ol. On Hawthorn, Fylinghall, 26/6/36.
- *var. *albicinctus* Germ along with the type, Fylinghall, 26/6/36.
- *var. *infumatus* Fieb. Also with the type, Fylinghall, 26/6/36.
- Neither of these varieties have been recorded for the county.
- C. brachycranus* Scott. Common on Sallows, Fylinghall, 19/6/36 and 8/9/36; and Skelder Place, 11/9/36.
- Conomelus limbatus* Fal. Plentiful among Rushes, Skelder Place, 11/9/36.
- Delphacodes leptosoma* Flor. Fylinghall, 19/6/36. This small species has only been taken previously in Yorkshire at Hovingham, 1935.
- Stiroma albomarginata* Curt. Fylinghall, 19/6/36.
- Psylla peregrina* Forst. Plentiful on Hawthorn, Fylinghall, 8/9/36; Ramsdale, 15/9/36; and Mulgrave Woods, 23/9/36.
- P. mali* Schm. Fylinghall, 10/9/36; Sandsend, 20/9/36.
- P. costalis* Flor. Fylinghall, 8/9/36; Mulgrave Woods, 23/9/36; Runswick, 19/9/36.
- P. nigrita* Zett. On Scots Fir, Skelder Place, 11/9/36.
- Trioza urticae* L. Common.
- T. remota* Forst. Mulgrave Woods, 23/9/36.

TRICHOPTERA.

The variety of Caddis-flies noted about the different streams in the district did not come up to expectations. Perhaps July and August

would have yielded a greater variety. Those taken included the following :—

- Limnophilus stigma* Curt. Very numerous about a small pool on the cliffs between Runswick Bay and Port Mulgrave, 15/9/36 and 21/9/36. Taken previously in V.C.62 at Hovingham, 1935.
- L. centralis* Curt. Much more widely distributed than the last. Fylinghall, 26/6/36 ; Ramsdale, 10/9/36 ; Skelder Place, 11/9/36.
- L. affinis* Curt. Maw Wyke, 16/9/36 ; Sandsend, 23/9/36.
- L. sparsus* Curt. Fylinghall, 26/6/36 ; Skelder Place, 11/9/36.
- Anabolia nervosa* Curt. Widely distributed in the district. Beck Hole, 17/9/36 ; Arncliffe Woods, 17/9/36 ; Mulgrave Woods, 12/9/36 ; Ramsdale, 24/9/36.
- Stenophylax latipennis* Curt. This fine species was taken only in Ramsdale, 24/9/36. Recorded previously for V.C.62, from Saltburn.
- Drusus annulatus* Steph. One of the most commonly occurring species. Fylinghall, 8/9/36 ; Oxbank Wood, 14/9/36 ; Mulgrave Woods, 12/9/36 ; Maw Wyke, 16/9/36 ; Runswick, 18/9/36 ; but previously known in V.C.62 only from Hayburn Wyke.
- Sericostoma personatum* Sp. Fylinghall, 26/6/36, and a specimen caught on a pleasure launch off Whitby, 23/6 ; it was evidently flying at sea.
- **Crunoecia irrorata* Curt. Fylinghall, 10/9/36. Not previously known. from V.C.62.
- **Odontocerum albicorne* Scop. Mulgrave Woods, 12/9/36. New to V.C.62.
- Mystacides azurea* L. Very plentiful flying over the River Esk near Ruswarp, 11/9/36.
- Wormaldia occipitalis* Pict. Fairly widely distributed. Fylinghall, 8/9/36 ; Maw Wyke, 16/9/36 ; Mulgrave Woods, 12/9/36.
- Rhyacophila dorsalis* Curt. Beck Hole, 17/9/36 ; Arncliffe Woods, 17/9/36 ; Ramsdale, 24/9/36.
- R. obliterata* McL. Much more plentiful than the last. Beck Hole 17/9/36 ; Arncliffe Woods, 17/9/36 ; Ramsdale, 10/9/36 ; Oxbank Wood, 14/9/36 ; Fylinghall, 8/9/36 ; Maw Wyke, 16/9/36.

PLECOPTERA.

Like the Caddis-flies, Stone-flies were less numerous than was to be expected from the number of likely streams worked, but no note was made of the nymphs occurring in the streams.

- Chloroperla torrentium* Pict. Fylinghall, 26/6/36.
- C. tripunctata* Scop. With the last, Fylinghall, 26/6/36.
- Taeniopteryx risi* Mort. Fairly plentiful by a beck near Fylinghall, 25/6/36.
- Leuctra fuscinervis* Steph. By far the most common species, occurring by all the streams worked. Fylinghall, 23/6/36 and 8/9/36 ; Oxbank, Wood, 14/9/36 ; Ramsdale, 24/9/36 ; Arncliffe Woods, 17/9/36 ; Maw Wyke, 10/9/36 ; Mulgrave Woods, 12/9/36 ; Skelder Place, 11/9/36.
- L. inermis* Kmpy. Fylinghall, 26/6/36.
- L. nigra* Pict. Fylinghall, 19/6/36.
- Protonemura meeyri* Pict. Fylinghall, 19/6/36.
- Amphinemura cinerea* Oliv. Fylinghall, 26/6/36.
- **Nemoura marginata* Pict. Fylinghall, 19/6/36. New to V.C. 62.

Ephemeroptera

As would be expected some species of May-flies occurred in enormous numbers flying and dancing in clouds in the evenings near the streams.

This was noticed especially by the R. Esk near Egton Bridge, and by the East Row Beck, Sandsend.

Species seen :

Ephemerella ignita Poda, Swarming at Egton Bridge, 17/9/36.

Baetis rhodani Pict., with the last at Egton Bridge, 17/9/36.

Centroptilum luteolum Mull. Fylinghall, 12/9/36.

**C. pennulatum* Eat. appeared to be more common than the last, which to me seems unusual. In swarms by East Row Beck, 20/9/36 ; West Row Beck, 22/9/36 ; Fylinghall, 12/9/36. New to V.C. 62.

**Cloëon rufulum* Mull. Egton Bridge, 17/9/36 ; East Row and West Row Becks, Sandsend, 20/9/36. New to V.C. 62.

**Rithrogena semicolorata* Curt. Fylinghall, 20/6/36, and 22/9/36 ; Oxbank Wood, 14/9/36 ; Egton Bridge, 17/9/36. New to V.C. 62.

**Ecdyonurus venosus* F. Fylinghall, 20/6/36. New to V.C. 62.

E. longicauda Steph. Fylinghall, 22/9/36, replacing the earlier species ; and in Mulgrave Woods, 12/9/36.

NEUROPTERA.

This season does not seem to have suited these insects, and few species were taken.

Coniopteryx tineiformis Curt. Fylinghall, 25/6/36.

Hemerobius marginatus Steph. Fylinghall, 25/6/36 ; Skelder Place, 11/9/36 ; Mulgrave Woods, 12/9/36.

H. lutescens Fabr. On Oak, Skelder Place, 11/9/36.

H. nitidulus Fabr. Mulgrave Woods, 23/9/36.

Chrysopa vittata Wesm. Fylinghall, 25/6/36.

C. albolineata Kill. Mulgrave Woods, 12/9/36 ; Fylinghall, 23/6/36

Nathanica capitata Fab. A single specimen of this not very common species was taken at Fylinghall, 23/6/36, while beating Oaks.

PSOCOPTERA.

A considerable number of Psocids were collected, especially during September, including several of interest, giving additional localities to those recorded in *The Naturalist*, June, 1936, some being new to V.C. 62.

Metylophorus nebulosus Steph. Fylinghall, 10/9/36 ; Ramsdale, 19/9/36 ; Arncliffe Woods, 17/9/36.

Psococerastis gibbosa Sutz. Arncliffe Woods, 17/9/36.

**Trichadenotecnum sexpunctatum* L. On Beech trunks, Sleights, 17/9/36.

Amphigerontia bifasciata Latr. Fylinghall, 26/6/36.

Loensia fasciata Fabr. Fylinghall, 26/6/36.

Graphopsocus cruciatus L. As usual one of the most plentiful species.

Fylinghall, 19/9/36 ; Ramsdale, 19/9/36 ; Arncliffe Woods, 17/9/36 ; Mulgrave Woods, 12/9/36 and 23/9/36 ; Runswick, 15/9/36.

Stenopsocus immaculatus Steph. Probably commoner even than the last. Fylinghall, 26/6/36 and 19/9/36 ; Arncliffe Woods, 17/9/36 ; Sandsend, 20/9/36 ; Mulgrave Woods, 12/9/36 and 23/9/36 ; Runswick Bay, 15/9/36.

Reuterella helwimacula End. occurred quite commonly on tree trunks almost wherever it was looked for, frequently males and females being together. Fylinghall (on Oak), 14/9/36 ; Ramsdale (Elm and Oak), 19/9/36 and 24/9/36 ; Arncliffe Woods (Oak), 17/9/36 ; Sleights (Horse Chestnut), 17/9/36 ; Haggs Wood, Sandsend (Oak), 13/9/36.

Caecilius flavidus Steph. A frequent species of Oaks, Fylinghall, 26/6/36 and 8/9/36 ; Ramsdale, 19/9/36 ; Mulgrave Woods, 23/9/36 ; Skelder Place, 11/9/36.

- C. obsoletus* Steph. Mainly on Scots Fir and Larch. Arncliffe Woods, 17/9/36; Mulgrave Woods, 12/9/36; Skelder Place, 11/9/36.
- C. burmeisteri* Br. With the last, Mulgrave Woods, 12/9/36.
- **Lachesilla pedicularia* L. In considerable numbers among the grass on what is left of the sandhills, Sandsend, 20/9/36.
- Peripsocus phaeopterus* Steph. Ramsdale, 19/9/36; Mulgrave Woods, 12/9/36.
- Ectopsocus briggsi* McL. Mulgrave Woods, 23/9/36.
- Elipsocus westwoodi* McL. Skelder Place, 11/9/36; Mulgrave Woods, 12/9/36.
- E. hyalinus* Steph. Mulgrave Woods, 12/9/36.
- Philotarsus flaviceps* Steph. Common and widely distributed. Ramsdale, 19/9/36; Sleights, 17/9/36; Skelder Place, 11/9/36; Deepgrove Wyke, 15/9/36.
- **Hyperetes guestfalicus* Kbe. occurred quite frequently on tree trunks. Fylinghall (Sycamore), 24/9/36 (and Oak), 14/9/36; Arncliffe Woods (Oak), 17/9/36; Mulgrave Woods (Sycamore), 23/9/36; Hags Wood (Oak), 13/9/36.

REVIEWS AND BOOK NOTICES

A Pocket Book of British Wild Flowers, by Chas. Hall, pp. 110, 48 coloured and 7 photographic plates. A. and C. Black, 5/- net. This book gives descriptions and illustrations of common British flowers. Those chosen for illustration are the more attractive ones; the text also describes the main features of other members of the genera illustrated. The descriptions are couched in simple terms and no botanical knowledge is required to appreciate them. In most cases, the origin of the popular names is indicated and also any curious features of the plant or its life history. The coloured illustrations are by C. F. Newall, who has evidently a gift for delineating the essential features of colour and habit. This is a very attractive little work, and it will appeal to the botanists in addition to being useful for the non-botanical.

A Modern Biology, by E. J. Holmes and R. D. Gibbs, pp. 272, 163 illustrations. Cambridge University Press, 3/6 net. This is primarily a text book of biology covering the whole of the plant and animal world. Lest this may sound dull, it may be said that it is extremely well written, and it is biologically sound and up to date. It is one of the few books which might be recommended to a naturalist desiring to know more about the fundamental properties of plants and animals, the way in which they work and the mechanisms underlying their behaviour. It is couched in simple language, though not 'written down' and the interesting things in recent work are also included. The illustrations are mostly original and are very useful. This will probably prove a very successful elementary text-book.

I Visit the Antipodes, by Cherry Kearton, pp. 223, 67 illustrations. Jarrolds, 8/6 net. This is an account of a naturalist's visit to Australasia, the descriptions centring mainly about the curious animals characteristic of that continent. As a Yorkshireman, Mr. Kearton was attracted by the possibility of following in the footsteps of Captain Cook, with the results here described. The author's easy style is well known and his accounts of his experiences with animals such as the platypus, the lyre bird and the tuatara make excellent reading. Not least amusing is his conversation with a chimpanzee. Of the illustrations it may be said that they reach Mr. Kearton's own high standard. This is an excellent example of the lighter type of book on natural history, containing much unusual information.

YORKSHIRE NATURALISTS' UNION : VERTEBRATE ZOOLOGY SECTION

REPORT of a meeting held in the Library of the Church Institute, Leeds, on Saturday, February 20th, 1937.

The sectional meeting was preceded by a meeting of the Yorkshire Wild Birds and Eggs Protection Acts Committee.

At the sectional meeting the Chair was taken by the President, Mr. C. W. Mason, who paid a tribute to the retiring President, Alderman A. Hirst, J.P.

Mr. W. R. Grist read a paper entitled 'The present position in the study of bird migration' and stated that seasonal movements of birds and of many other creatures have been observed from time immemorial. Up to comparatively recent times these comings and goings were regarded, quite reasonably, as events fraught with great mystery. It is to the credit of the ornithologists of the early part of the nineteenth century that they accounted correctly for the annual comings and goings of birds in this country.

The present century has witnessed an intensified 'drive' to ascertain more and more of the ordinary facts of migration. The most important practical work has been that of the ringing of individual birds in many countries. An enormous mass of material has been examined, arranged and summarised with a tendency in recent years to express results in terms of a particular species rather than a general list.

The following are the main lines along which investigations are proceeding :

1. That migration is not confined to the annual move in spring to the breeding grounds and the autumn vacation of this ground has long been suspected in the case of certain species. The flights immediately following the vacation of the nests are often in an opposite direction.

2. The curious irregular migrations or 'invasions' have received a good deal of attention, but no final satisfactory explanations are forthcoming up to the present.

3. A great deal of work has been done in the last thirty years in the direction of recording migrations of a type which will help to solve the problem of the underlying reasons for migration.

Experiments conducted by J. P. Chapin in the Belgian Congo indicate that certain migratory birds can be given a detailed classification according to whether they breed north of the equatorial forest belt, south of it, or both north and south.

4. Many observations as to speed of flight, order of age of birds of a species when migrating, order of sexes in migration, and so on, have been made recently, but no general simple rules appear to have emerged so far.

Recently there has been a tendency to discount to some extent what was once an almost universally accepted statement. That is, that birds on migration follow rather narrowly defined paths.

It will be generally agreed that the most important aspects of the study of migration are those dealing with theories regarding the mechanism and the origin of the habit. It is only recently that the trained biologist has turned his attention to the subject and results up to date serve to indicate what a vast field there is still to explore. The causes underlying the creation of the migratory habit have certainly not been discovered as yet, and the real solution may be a very long way off.

As birds generally begin migration well before a food shortage sets in, one must look for some other stimulus without which they would not migrate. It is here that most of the serious work has been done. An outstanding example of modern work is that of Rowan, who has sought, fairly successfully, to show that there is a relationship between the

state of the sex glands at different times of the year and migratory behaviour. It appeared that artificial and progressive lengthening of the day produced a premature recrudescence in the gonads which brought into operation the migration instinct at an inappropriate season by means of interference with the annual physiological cycle.

Finally, and the greatest riddle of all : how do birds find their way on migration?

The most hopeful line taken at present is that success in migration is due to the cumulative inheritance of memories of routes.

In conclusion the lecturer emphasised that the science of ornithology is not played out. The whole subject is packed with intensely interesting and unsolved problems of which migration is but one.

Miss Ellen Gallwey read a paper entitled 'The Development of a young African Python.' This constrictor came from the West Coast of Africa and arrived in Huddersfield on Christmas Day, when it was confined in a cage heated to 78° F. It was fed on mice and young rats and the numbers consumed were as follows : January, 4 mice ; February, 2 mice ; March, 6 mice ; April, 1 mouse ; May, 3 mice ; June, 1 mouse ; July, 1 mouse ; August, 2 mice ; September, 13 small rats ; October, 7 rats and mice ; November, 4 mice.

Its length on January 11th was 34 ins. ; on July 12th, 40 ins. ; on September 6th, 44 ins. ; and in early December, 47 ins. In eleven months it added 13 ins. to its length.

It sloughed in February, April, June, August, September, and November.

On one occasion it consumed a frog intended for a grass snake occupying the same cage ; on another occasion it constricted and killed a Mississippi alligator, 18½ ins. long, actually bursting the heart. On a third occasion it was engaged in swallowing a rat when it caught and constricted a second rat with the hinder three-quarters of its length.

Early in December the snake escaped from its cage and was found next morning dead from the cold.

Miss Ellen Gallwey read a second paper entitled 'The Development of the Axolotl.' This creature was kept in an aquarium for the first twelve months and fed on worms. It was then 6 ins. long and it was decided to attempt to transform it to a land animal. The food supply was cut down and the depth of water reduced to 2½ ins. with dry land at one end. The gills decreased in size and the dorsal fin commenced to turn over until one month later it was completely absorbed. It then commenced to leave the water at night and finally developed terrestrial habits, which culminated in its drowning itself in its own water trough. The complete transformation took place between January and the end of September.

Mr. C. W. Mason read a paper entitled 'White Wings,' in which he described and illustrated some favourite nesting sites of sea-birds.

The Bass Rock was first described and the lecturer stated that Gannets were known to nest there as far back as 1448. At one time the birds were farmed and their oil was extracted and sold as it was believed to possess valuable medicinal properties. Both the eggs and young were taken and sold for food.

Only fifteen nesting stations of the Gannet are known, and of these nine are British. They are Lundy, Ailsa Crag, North Bara, St. Kilda, The Bass, The Stacks, Skelling, Grassholme and The Bull. Lundy Island was known as a nesting site for some 600 years, but has now been deserted for sixty years.

The single egg is laid in mid-May and hatched early in July after a period of incubation of forty-seven days. The young, when hatched, are blind and naked, and a week elapses before the eyes open and the white down begins to appear. Early in September their parents cease feeding them and try to induce them to leave the cliff, which they do

after a few days. On reaching the sea they are helpless for a time and live on their reserves of fat until they are able to catch fish for themselves. The Gannets arrive at the Bass Rock at the end of February and have all left by October.

The lecturer next described the Bempton and Flamborough Cliffs, and showed numerous photographs, both of the cliffs and of the professional climbers at work collecting Guillemots' eggs. Reference was made to the former scarcity of the Kittiwake Gull owing to the destruction that formerly took place during the nesting season, and to the incidence of the Protection Acts which had resulted in a remarkable increase in their numbers.

Mr. W. Bennett gave a paper entitled 'Birds of Skokholm and Grassholme Islands,' and showed moving pictures illustrating the nesting habits of the Manx Shearwater, Puffin and Guillemot. Excellent studies of the Lesser and Greater Black-Backed Gull were shown, as also of a pair of Ravens feeding on a dead rabbit.

The large Gannet Colony on Grassholme was next shown. As the nests are built on ground that only slopes gently the birds experience difficulty in taking wing and those nesting on the higher ground literally charge through the colony with outspread wings before they are able to take off.

Other interesting subjects were the Rock Pipit, a pure white Puffin, and the herd of deer-like sheep which live on the island.

Mr. G. R. Edwards showed moving pictures of the Crested Tit, Coal Tit and Waterhen. An excellent series of the Dipper and Reed Bunting was also shown. In order to obtain sufficient light to photograph the former it was necessary to remove a plank from a bridge and the Dipper appeared most perplexed at the change that had taken place.

Finally, a vote of thanks to the lecturers and the lanternists was moved and carried unanimously.

E. WILFRED TAYLOR.

Hand-Book for the Curious, by Paul Griswold Howes, pp. 364, 329 illustrations. Putnam, 15s. net. This book is adequately described by its title. It contains details of the life histories and the more interesting facts about animals commonly found in the country and on the seashore in the northern United States. Most of the species described are represented in Europe and the descriptions are good and accurate. The illustrations are mostly photographic and they reach a high average standard. There is a general introduction dealing with the different classes of animals, their peculiarities and relationships. This is a very useful work, suitable either for the naturalist or for those interested only in occasional curious finds.

A Country Garden, by Ethel Armitage, pp. 226, numerous illustrations. Country Life, 10/6. The seasonal changes in a country garden and in the surrounding countryside make up the theme of this book. It is evidently the work of a nature-lover and a keen observer, and written more in the style of a diary of interesting things than as a systematic contribution. There is no doubt that many lovers of the countryside will find it extremely attractive and may well put it on the same plane as Gilbert White's *Selborne*. It is well written and the style is pleasant with a delicate wit. The illustrations are by John Farleigh, who first attracted notice by his woodcuts in Shaw's *Black Girl*. There is no doubt of their ability, but opinions may differ as to their suitability for this book. The reviewer would have found a lighter style more in keeping with the prose style. This is, however, definitely a book with personality.

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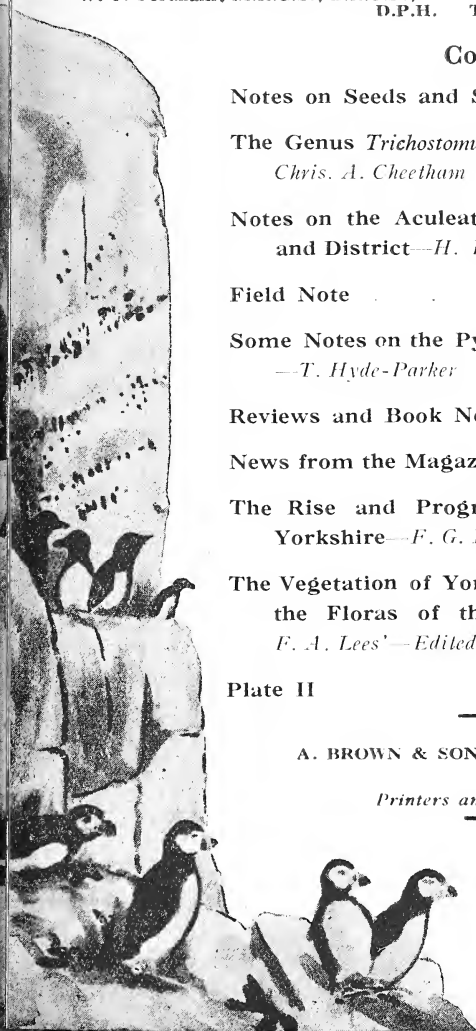
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NOTES ON SEEDS AND SEEDLINGS

W. E. L. WATTAM

MOUNTAIN ASH (*PYRUS AUCUPARIA* Gaertn)

As the seasons of 1936 were more normal as regards rainfall in the Huddersfield District, I thought another fertility test in regard to the fruits of this tree might prove of interest when compared with my test upon the 1935 fruit yield reported upon in this Journal for 1936, pp. 55-6. Locally this tree produced a magnificent display of fruit in 1936. The trees in the Meltham valley used in the 1935 test were again a ravishing sight, one most noticeable carrying between four and five hundred racemes of fruit of excellent appearance and greatly in advance as regards size and colour with the 1935 crop. For a comparison test I gathered fruit while on a visit to the extreme head of the Holme valley from a tree bearing 380 racemes of well-ripened fruit. The outer fruits of each raceme from each locality were of a fine normal size while the inner fruits, although quite sound, were much smaller. A striking contrast on dissection of the fruits was that not a single fruit from the Holme valley showed the slightest signs of decay. The decay in the Meltham valley fruits was again pronounced, 117 being thus affected. For comparison I have included the 1935 results in the following tabular analysis of my tests, viz. :—

Locality	Fruits examined	Decayed or rudimentary endocarps	Sound endocarps	Seed production
Meltham Valley, 1935	240	187, all decayed	53	114
Meltham Valley, 1936	250	138, 117 decayed, 21 rudimentary	112	176
Holme Valley, 1936	250	129, all rudimentary	121	258

The comparison would appear to prove that the more normal moist conditions of the seasons generally in 1936 enabled the trees to obtain a constant food supply more satisfying to the production of seeds than the dry seasons of 1934 and 1935 when moisture and food supply were greatly restricted. This is pronounced in the increased number of sound endocarps and seeds produced. The Meltham Valley endocarps gave the following seed results :—30 with three seeds, 4 with two seeds, and 78 a single seed each. The Holme

MAY 13 1937

Valley endocarps gave the following results:—13 with four seeds, 30 with three seeds, 38 with two seeds, and 40 single-seeded.

While in the Youdon Valley on 14th November, 1936, I picked up 76 fruit from the base of a fine example of this tree. The tree was leafless, but was carrying at a rough estimate 350 racemes of fruit upon which Mistle Thrush and Blackbird were feasting. An examination of these fruits gave the following results: 39 with rudimentary endocarps (6 decayed) and 31 with sound endocarps, the seed yield of the latter being 3 with 4 seeds, 7 with 2 seeds, and 21 single-seeded, a total of 47 seeds.

CRATÆGUS OXYCANTHA L. (Hawthorn)

I gathered at Cawthorne in January, 1923, fruits of the 1922 crop and planted 200 in ordinary garden soil and placed in a cold frame. From May to June, 1924, 22 seedlings appeared, a germination of 10 per cent. In October, 1930, I gathered 400 fruits and kept over the winter in closed tins until April, 1931, when they were planted in a compost of old turfy loam with a slight admixture of sand and placed in a cold frame. The endocarp of the fruit is extremely hard with slight longitudinal grooves. At the apex there is a slight depression wherein the stigmatic point is prominent. On splitting, the inner shining coat of pearly grey is revealed. The seed is ovoid, with a yellowish-brown testa: the endosperm is greyish-white in colour. From May to June, 1932, 83 of the fruits germinated, equal to 20 per cent. The cotyledons are thick and fleshy. In August I transplanted 24 of these seedlings to form a hedge. They made good growth despite a mildew attack of the foliage. By the end of September, 1935 (after a slight top pruning in April) they varied in height from 20 to 24 inches. Growth was excellent in 1936. After a top pruning in April the height at the end of the year is $2\frac{1}{2}$ feet with sturdy, spinous branching.

FRAXINUS EXCELSIOR (ASH)

A test of the seeds of the 1930 crop planted in my garden in mid-April, 1931, gave the following germination results in May, 1932, viz.: 120 gathered at Newsome, 93 per cent.; 250 gathered at Flockton, 93 per cent.; 250 gathered at Wakefield, 93 per cent.; 60 gathered at Goathland, 97 per cent. The latter seeds were sent to me by Mr. R. J. Flintoff, and were very fine specimens. The seedlings were permitted to grow as germinated. At the end of December, 1932, the height of the young trees was 9 inches. On September 21st, 1935, an observation showed that, although somewhat crowded, the young trees were vigorous, averaging 2 feet 8 inches to 2 feet

in height from soil level. Owing to the crowding there had been little branching: what branches that had been given off averaged 3 inches in length. Thus in three years the ratio of growth had increased 2 feet. The Goathland seedlings had by 26th December, 1936, developed into fine sturdy young trees averaging 4 feet $1\frac{1}{2}$ inches in length with 7 to 8 branchlets 4 to 5 inches long. The seedling trees from the other localities only averaged 2 feet 10 inches in length having 4 to 5 branchlets $4\frac{1}{2}$ to 10 inches long.

ROOT SYSTEM.—In December, 1932, it was found that the concentration of the plant prior to winter was devoted to establishing a good root system. Each root then examined was branchless, tapering, 4 inches in length with a small fibrous base. A further examination on 21st September, 1935, showed an increase in length to $12\frac{1}{2}$ inches, 4 to 5 branches, each 3 to 4 inches in length, both branches and root base being fibrous. The girth of the root midway was slightly over half an inch. On 26th December, 1936, the main roots of the Goathland trees were 27 inches in length, 3 forked above the end, such forks averaging 16 inches in length. The girth of the root 4 inches below ground level was 4 inches, and at 10 inches, 3 inches. Lesser root branches were given off 2 inches below ground level of an average length of 9 inches and each very fibrous. The main roots of the seedling trees from the other localities averaged 16 inches in length and 2 inches below ground level, 10 branches were developed each very fibrous. Four inches below ground level the girth of these roots was $2\frac{1}{2}$ inches, and at 10 inches, 1 inch.

ROSA CANINA, L. (DOG ROSE)

Two hundred seeds extracted from fruits gathered at Farnley in November, 1930, were planted in April, 1931. Between 11th and 26th May, 1933, 15 seedlings made their appearance. The contents of the pot were not disturbed, and in the month of May, 1934, 61 more seeds germinated, 37 per cent. All the seedlings had obtained a height of 6 inches, when, owing to their becoming badly attacked by mildew I destroyed them. Apparently the germination of the seed takes from 2 to 3 years.

HOUSELEEK (*SEMPERVIVUM TECTORUM*, L.)

A test of the fertility of the seed obtained in 1935 (see *The Naturalist*, 1936, p. 55) has proved quite satisfactory. On 10th April, 1936, I scattered on a piece of old brick, roughly 50 seeds. The brick was placed in an earthenware saucer and kept moist. Between 2nd and 16th May 22 of the seeds had germinated. A small white stalk bore at its apex

a light green globule, representing the two cotyledons, which, on fuller development, were thick and fleshy, becoming a deeper green in colour, the margins of each being fringed with hairs. Unfortunately the radicle was unable to penetrate the brick, and the whole of the plants were ultimately lost through this lack of fixidity. On 15th July I tried again, this time using as the growing medium a piece of very old mortar covered with a minute moss growth. I scattered roughly 50 seeds thereon keeping the mortar moist as previously described. Thirty-five seeds had germinated by 2nd August. The growth of their cotyledons was as already described. By 31st August each seedling had developed two pair of true seed leaves, each light green in colour, margins hair fringed. The cotyledons became much reduced in thickness. Fourteen of the seedlings died. By 30th December the cotyledons had entirely decayed, and each of the young plants was a typical miniature rosette nestling in their mossy habitat, the moss, a species of *Tortula*, having become well developed. It can well be understood why, growing under natural conditions, with, in most cases, a surrounding habitat unsuitable to their immediate and continued development, seedlings of this plant are so seldom enabled to reach maturity. Judging from my test (under the sheltered conditions of a cold greenhouse) practically 50 per cent. of the seeds germinated.

HEATH BEDSTRAW (*GALIAM SAXATILE*, L.)

Further observations on the seedlings plants raised in 1935 (see *The Naturalist*, 1936, pp. 55-6) were interesting. The growth made in 1935 suffered severely during the harsh wintry conditions of January and February of that year. Vigorous growth recommenced in early April, and, proceeding apace the three selected plants by 2nd July covered a ground space of 2 feet 5 inches in length by 1 foot 10 inches in breadth. 167 bloom spikes were produced. By the end of September the large green mass of intermingled main and subsidiary stems was somewhat triangular in shape. The length being 3 feet 2 inches, and breadth at base 2 feet 1 inch and at 1 foot upwards 1 foot 9 inches. gradually narrowing to an apical breadth of 4 inches. But few of the bloom spikes bore fruits, but on the whole quite a good quantity was developed. After flowering the non-fruiting spikes became depressed into the foliage growth, whilst the spikes which developed fruits remained erect and withered in a normal manner.

TRIFOLIUM REPENS, L. (White Clover)

Seventy-five seeds were planted 4th May, 1935 (gathered 1934) and between that date and 7th June, 70 had germinated.

The cotyledons are small and broadly ovate. The first pair of true leaves are oftentimes only evidenced by a single leaflet or two leaflets, but the majority were of the true trifoliate type. The succeeding leaf pairs are of the true type and in their axils buds arise which give rise to branches. When the plants had assumed more vigorous growth the leaflets became more broad and typical. At 20 days old the plants had produced an average of 3 to 4 pairs of typical leaves; at 40 days old 6 pairs of typical leaves, and the leaflets of the fourth pair of leaves had increased to twice their size; at 60 days old the leaf stalks had lengthened, and the leaflets were practically of mature size. At the extreme base of the plants buds had given rise to additional stems. The root system branches extensively, and after the plant is 90 days old bacterial nodules are produced thereon.

AIRA FLEXUOSA, L. (Mountain Hair Grass)

This grass is one of the characteristic features and dominant pointers of the vegetation of our gritstone sandy areas and dry grass heaths, whilst upon the immense quarry waste heaps it has scarce any competitor so rapid and tenacious is its hold upon such a habitat. Dr. J. Grainger has published an account of his investigation of the extensive root system of a selected 'tuft' of this grass (see *The Naturalist*, 1935, pp. 169-173). My observations upon this plant from the seedling stage have been most interesting. In a first experiment seeds obtained from plants in Dean Wood, Netherton, were planted on the 5th September, 1935, 60 of such seeds in two pots of sandy soil obtained from the quarry waste on the north side of this wood. By the 31st October, 1935, 24 seeds had germinated. The growth of the seedling plants was extremely slow: by the end of November the first leaves to appear were only $1\frac{1}{8}$ inches in length. Severe wintry conditions ensuing growth was static until mid-March, 1936, when the foliage increased to 2 inches. By the end of June the foliage arising from the buds had attained a length of 9 inches, the basal sheaths were the typical dark red colour and the stem base was giving off further buds. In order to see what effect a state of absolutely dryness would have upon the seedling plants I kept for 6 weeks (August to mid-September) the plants in one of the pots under sheltered dry conditions, the plants receiving no moisture by the application of water. At the end of 6 weeks the foliage of each plant had assumed the stiff, incurved wiry nature so typical of the mature plant in a dry habitat, and half of each leaf (from apex to half length) became tinged a reddish brown. On the 12th September I took the plants out of the pot, and after clearing away the matrix in which they had been growing

I examined the root system of 4 selected plants. I found that the brief rootstock had produced 9 growing points having 17 vertical main roots averaging $8\frac{1}{4}$ to 9 inches in length, each main root having an average of 32 subsidiary branches from $1\frac{3}{8}$ to $\frac{1}{2}$ of an inch long. These plants were then 278 days old. The plants in the remaining pot were kept growing under normal conditions and were also removed from the pot on the 12th September, their root system cleansed, and 4 plants selected. These plants gave a rootstock averaging 18 buds having 18 vertical main roots each 6 inches in length with 50 subsidiary branches. It was interesting to note that the number of buds was doubled, while the vertical main roots of the plants kept under the dry test had exceeded in length those of the plants kept under normal conditions by $2\frac{1}{2}$ inches, the quest for moisture evidently being the reason for this excess length. In a second observation I planted on the 14th April, 1936, 240 more of the seeds obtained from Dean Wood in a soil content consisting of equal parts of decayed sod and rough sand. At the end of 25 days germination had commenced, the seedlings plants ultimately being 26 in number. The rootstocks on the 16th May had given rise to from 4 to 8 growing points, the development being slightly fanwise in manner. By the 31st August each plant had developed from 12 to 14 growing points and was then assuming a rounded tuft 6 to 8 inches in height, the foliage being dark green and wiry. By the 30th December, 1936, each plant had developed from 20 to 22 growing points which formed a compact tuft. Many of the older leaves were decaying, their increase in length being negligible: the basal sheaths were a deep ruddy colour. An intense period of frost (6 to 13 degrees) from the 5th to the 10th December did not affect the plants. For the purpose of comparison attention was paid to development of plants germinating from seed in their natural habitats. In the selected situations the result of my observations proved that the growth of the plant under natural conditions in no wise differed from that observed during my own tests. It was further noticed that the grass is an excellent coloniser, and that the seedlings soon make a good root growth. The development of the foliage would, however, appear to depend in some degree upon the free development of the root system which, in turn, is controlled by the substratum upon which the seedling plants seek to establish themselves. This is most marked upon the quarry waste heaps where, once established amongst the sandy debris, the root system is freely developed owing to the loosely built nature of the substratum. Seedling plants of 1936 in such a habitat examined in August, 1936, showed a development of 9 growing points, having 13 vertical main

roots averaging $4\frac{1}{4}$ inches in length, each giving rise to 44 subsidiary branches from $1\frac{5}{8}$ to $\frac{3}{4}$ of an inch long. The development of seedling plants growing in a sandy peat compost of but slight depth, resting upon clay, gave rise to 9 to 11 growing points, 7 main horizontal roots of $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long giving rise to from 22 to 27 subsidiary branches. As growth of the seedling plants proceeds apace they soon become an intermingled mass of branching rootstocks, each giving rise to innumerable buds and blending into one compact sod. The fertilised seed produced by a single panicle would, when judged from my two tests, appear to be extremely poor, 50 out of 300, or 16 per cent. But I should say that the general average germination naturally is not much higher, when compared with the number of seedlings in my selected habitats, in relation to the countless panicles produced by the mature plants colonising such habitats. Even allowing for the wastage which must ensue, and the destruction of young seedlings, the fact still remains that the average fertile seed yield is very meagre, and in all probability is not more than 20 per cent.

THE GENUS *TRICHOSTOMUM* B. & S. AT AUSTWICK

CHRIS. A. CHEETHAM

ONE of the conspicuous mosses in the limestone area is *Trichostomum tortuosum* Dixon. It grows in large yellow green tufts, the majority being between 3 and 6 inches in diameter. These deep tufts with long twisting and spreading leaves are soon recognised. The other two species found in the district are *mutabile* Bruch., generally found on rocky sides in ghylls (it is a deep tufted plant and as grown here is placed under the variety *cophocarpum* Schp.), and *crispulum* Bruch., the latter being very variable; one variety, *nigro-viride* Braithw., having extremely short and narrow leaves, while forms near var. *viridulum* Braithw., are much larger in every way than the normal type, and all kinds of intermediates are found. The beginner should have no difficulty in identifying these three, but I recently found a plant in large flat deep tufts on the limestone pavement of Moughton at 1,200 ft. O.D. which I had previously passed over in the field as a *crispulum* form, but on examination I found it belonged to the *tortuosum* group having the hyaline cells at the base of the leaves ascending up the margin. The leaves are not flexuose, being short and straight and only half the length of those of typical *tortuosum* plants which are growing interspersed with this new form. This must prove a puzzle to bryologists, for by Dixon's keys a beginner will refer it to

fragile Dixon, a species that has a very long hair-like point in its typical form, whereas my plant has a shorter hyaline point than *tortuosum*. I have long known a plant with similar leaves but which occurs on Moughton on steep screes in very rounded bosses, and this has been distributed through the Moss Exchange Club as var. *fragilifolium* of *tortuosum*. Unfortunately we have another plant of entirely different growth and appearance that has also been placed under this variety. This plant was at first accepted as *nitidum* Schp. and I can only see a difference in the slightly less stiffly curled leaves when dry and the less shiny nerve on the back of the leaves which have a broader apex in typical *nitidum*. I find this moss on fallen blocks of the conglomerate from the base of the limestone and it occurs in two places a mile apart at altitudes of 600 ft. O.D. and 750 ft. O.D. Normal *tortuosum* also grows on these rocks and I have seen the plants growing intermingled. The tufts are small, about one inch across, the colour is much darker, and the habit is very rigid. Dixon describes a similar plant from Snowdon which he considers to be a 'starved mountain form,' but the Austwick plant is at a low elevation and cannot be called a mountain form.

Generally speaking *tortuosum* varies little here. At most some tufts are looser grown, the leaves being still more tortuose. It usually presents a very regular appearance and when one finds it growing with what appear to be small dark neat tufts of *nitidum* or again with the straight-leaved tufts of this *crispulum* or *fragile* form it will trouble a beginner to place the whole of them under *tortuosum* and it will be a help to know that at Austwick we have :—

1. Normal *tortuosum* with leaves very flexuose from 4 to 5.5. mm. long with hyaline tips .2 to .25 mm.

2. var. *fragilifolium* having leaves straight and only 2.5 mm. long with hyaline tip .08 mm. This plant runs down to *fragile* with Dixon's keys and grows in flat tufts on limestone pavement or rounded bosses on screes, both being at a high altitude, 1,200 ft. O.D.

3. a *nitidum* form in small, neat, dark tufts agreeing with the description of *nitidum* but differing in the sharper apex and less shining nerve, the leaves are 3 mm. long with hyaline point .06 mm.

The difference between these short straight-leaved plants and the normal long flexuose leaved form is definite and I have found no intermediates as yet. Possibly in these two forms we have the plants that are found in our Handbook of British Mosses under *T. nitidum* Schp. and *T. fragile* Dixon, these species accentuating certain differences from *tortuosum* to a still greater extent.

NOTES ON THE ACULEATE HYMENOPTERA OF WHITBY AND DISTRICT

H. BRITTEN

DURING the past three years many interesting Hymenoptera have been captured by the writer while collecting Coleoptera. Many of these provide additional data regarding Vice-County 62, to 'The Aculeate Hymenoptera of Yorkshire,' W. J. Fordham and R. Butterfield. (*The Naturalist*, 1930, pp. 241-246, 363-369; 1931, pp. 155-158; 1932, pp. 233-236, 256-259, 279-282, 309-311, 325-329.) There is no doubt that a more extensive list can be recorded if some keen worker would undertake the study of this section of 'Insecta' in the above area. My thanks are again due to my father, H. Britten, F.R.E.S., The Museum, Victoria University, Manchester, for his most valuable assistance in determining all the material collected, also for notes of his captures during his visits to the district. To W. J. Fordham, M.R.C.S., The Garth, Barmby Moor, York, who kindly checked the list, adding the indications regarding New County and Vice-County Records, by dagger and asterisk respectively. The following list contains 7 additions to the County and 15 additions to V.C. 62 Lists. All records without initials are the writers. The order adopted is that of the above-mentioned paper.

FORMICOIDEA

- Formicoxenus nitidulus* Nyl. Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). Several queens being captured in a nest of *Formica pratensis* Retz.
- Monomorium pharaonis* L. Whitby, 7/5/36 (H. Stainthorp). This small ant occurs in several houses in Whitby.
- Myrmica laevinodis* Nyl. Sleights, 6/10/35; Beckhole, 1/4/36; Mulgrave Woods, 15/4/36; Sandsend, 26/4/36; Ellerbeck, 8/8/36.
- M. ruginodis* Nyl. Mulgrave Woods, 15/4/36; Littlebeck, 19/4/36; Sandsend, 26/4/36; Ellerbeck, 8/8/36; Whitby, 8/12/36.
- M. scabrinodis* Nyl. Whitby, 20/9/36.
- Leptothorax acervorum* F. Beckhole, 4/5/35; Sleights, 9/6/35; Goathland, 14/7/35; Mulgrave Woods, 1/6/36, 4/7/36; Wragby Wood, 6/6/36.
- Acanthomyops (Donisthorpea) nigra* L. Grosmont, 4/4/34; Beckhole, 11/4/36, 13/4/36; Sandsend, 26/4/36; Whitby, 25/4/36; Ellerbeck, 8/8/36.
- A. (D.) flavus* F. Grosmont, 4/4/34; Sandsend, 23/4/35; Hazel Head, 27/7/35; Mulgrave Woods, 15/4/36.
- † *Formica pratensis* Retz. Hellwath Beck, 24/10/36 (H. B. and H. B., snr.). One nest definitely established as being this species.
- F. fusca* L. Grosmont, 4/4/34; Randymere, 18/8/34; Hazel Head, 27/7/35.
- † *F. fusca* var. *rubescens* For. Fylingdales Moor, 5/9/36.

CHRYSIDOIDEA

- * *Elampus auratus* L. Whitby, 24/1/36 (pupae) emerged 10/6/36.
- Chrysis ignita* L. Whitby, 21/6/35, 23/7/35, 19/5/36, 12/8/36; Hellwath Beck, 20/7/35; Mulgrave Woods, 4/7/36.

VESPOIDEA

- Mutilla europaea* L. Glaisdale, 12/8/36 (Mr. Gidman). A female brought to me alive.
- Ancistrocerus parietum* L. Whitby, 23/7/35, 9/8/35, 3/7/36, 20/9/36; Mulgrave Woods, 24/6/36.
- **A. pictus* Curt. Whitby, 2/6/36.
- Vespa vulgaris* L. Whitby, 12/6/35.
- V. rufa* L. Goathland, 4/5/35 (H.B., snr.); Beckhole, 4/5/35 (H.B., snr.); Mulgrave Woods, 6/5/35 (H.B., snr.); Whitby, 7/9/36.
- V. sylvestris* Scop. Beckhole, 4/5/35 (H.B., snr.); Whitby, 22/10/36.
- **Deuteragenia (Agenia) variegata* L. Mulgrave Woods, 24/6/36; Whitby, 24/8/36.
- †*Priocnemis gracilis* Hpt. Fylingdales Moor, 5/9/36.
- **P. parvulus* Dahlb. Goathland, 14/9/35.

SPHECOIDEA

- **Trypoxylon clavicerum* Lep. Hellwath Beck, 20/7/35.
- Clytochrysus chrysostomus* Lep. Beckhole, 3/8/36.
- †*C. cavifrons* Thons. Hellwath Beck, 20/7/35 (*Naturalist*, 1935, p. 247).
- Blepharipes leucostomus* L. Goathland, 14/7/35; Sleights, 28/7/35; Beckhole, 15/4/36 (pupae) emerged 9/6/36; Whitby, 16/2/36 (pupae) emerged 1/6/36.
- †*B. walkeri* Schk. Goathland, 14/7/35 (*Naturalist*, p. 247).
- **Crossocerus palmipes* L. Goathland, 14/7/35; Hellwath Beck, 3/8/35.
- **C. varius* Lep. Hellwath Beck, 20/7/35.
- C. elongatulus* V. de L. Whitby, 23/7/35; Mulgrave Woods, 24/6/36; 4/7/36; Runswick, 25/7/36.
- **Cuphopterus serripes* Pz. Whitby, 8/6/34.
- †*C. signatus* Pz. Hellwath Beck, 20/7/35 (*Naturalist*, 1935, p. 247).
- **Rhopalium tibiale* Lep. Mulgrave Woods, 24/6/36.
- **Physoscelius clavipes* L. Whitby, 23/7/35; Sleights, 28/7/35; Ellerbeck, 8/8/36.
- Pemphredon lugubris* Lat. Whitby, 23/7/35, 22/1/36 (pupae) emerged 25/5/36, 15/2/36 (pupae) emerged 19/5/36, 26/5/36; Sleights, 28/7/35; Hellwath Beck, 3/8/35.
- P. schuckardi* Mor. Whitby, 23/7/35.
- **Passaloecus gracilis* Curt. Mulgrave Woods, 3/8/36.
- P. monilicornis* Dahlb. Sleights, 28/7/35; Mulgrave Woods, 3/8/36.
- Psenulus pallipes* Pz. Runswick, 1/8/36.

APOIDEA

- Colletes glutinans* Cuv. Fylingdales Moor, 5/9/36; Whitby, 7/9/36.
- **C. fodiens* Kirb. Fylingdales Moor, 5/9/36.
- Sphecodes affinis* V. Hag. Whitby, 19/5/36.
- S. monilicornis* K. Mulgrave Woods, 10/8/35.
- Halictus freydessneri* Alf. Mulgrave Woods, 6/5/35 (H.B. snr.), 3/8/36; Goathland, 14/9/35.
- H. rubicundus* Chr. Mulgrave Woods, 6/5/35 (H.B., snr.); Whitby, 25/4/36, 12/8/36; Deep Grove, 20/6/36; Fylingdales Moor, 5/9/36.
- **H. ruftarsis* Zett. Egton Bridge, 1/6/35; Mulgrave Woods, 3/8/36.
- H. tumulorum* L. Littlebeck, 25/8/35; Goathland, 14/9/35.
- H. smeathmanellus* Kirb. Whitby, 10/5/34, 19/5/36, 25/6/36, 12/8/36,

- 24/8/36, 12/9/36; Sandsend, 5/5/35 (H.B., snr.); Sleights, 17/5/36; Beckhole, 1/6/36; Ellerbeck, 8/8/36.
- Andrena albicans* Kirb. Fylingdales Moor, 5/9/36.
- A. nigroaenia* Kirb. Whitby, 26/5/36.
- A. gwynana* Kirb. Whitby, 24/6/36.
- A. jacobae* Perk. Beckhole, 4/5/35 (H.B., snr.), 25/5/35, 2/5/36; Sandsend, 5/5/35 (H.B., snr.); Mulgrave Woods, 6/5/35 (H.B., snr.); Whitby, 9/4/36, 26/5/36, 21/7/36.
- A. fuscipes* Kirb. Goathland, 14/9/35.
- A. saundersella* Perk. Egton Bridge, 1/6/35.
- Nomada goodeniana* Kirb. Raithwaite, 10/5/34.
- N. marshamella* Kirb. Beckhole, 25/5/35; Whitby, 31/5/35, 19/5/36, 17/6/36; Sleights, 17/5/36.
- **N. hillana* Kirb. Sandsend, 3/6/34.
- **Megachile willughbiella* Kirb. Whitby, 23/7/35.
- †*M. versicolor* Sm. Whitby, 22/7/36.
- Osmia rufa* L. Beckhole, 4/5/35.
- **O. coerulea* L. Deep Grove, 20/6/36.
- Bombus lapidarius* L. Beckhole, 4/5/35 (H.B., snr.); Mulgrave Woods, 6/5/35 (H.B., snr.); Sleights, 17/5/36.
- B. lucorum* Sm. Mulgrave Woods, 6/5/35 (H.B., snr.).
- B. pratorum* L. Beckhole, 4/5/35 (H.B., snr.).
- B. hortorum* L. Beckhole, 4/5/35 (H.B., snr.); Whitby, 8/10/36.
- B. agrorum* L. Mulgrave Woods, 6/5/35 (H.B., snr.).
- Psithyrus campestris* Pz. Whitby, 2/4/36.
- Apis mellifica* L. Staithes, 28/6/35; Hazel Head, 27/7/35. Both well established colonies in hollow trees, presumably escapes from some apiary.

FIELD NOTE

Supposed Eiders near Hebden Bridge.—At a meeting of zoologists of the Halifax and District at the end of 1936, one of the younger members, Mr. E. Watson, of Hebden Bridge, reported that he had seen a number of Eiders at the most recently constructed Halifax Corporation reservoir at Gorple Moors, above Hebden Bridge. Thinking that he had not sufficiently realised the importance of this, I have since seen him personally and also corresponded with him in order, if possible, to obtain information to justify the publication of the observation. After considering alternative suggestions made by me he replied that the party (seen on November 1st, 1936) comprised two drakes and ten ducks. The drakes, he says, were unmistakable, while the ducks were just dull brown. The fowl took off in two V formations of 5 and 7, with a drake at the head of each. The whole party was constantly diving. When on the water the birds were 30 to 35 yds. away, but passed at 15 to 20 yds. and 15 ft. above. He watched through glasses of low magnification. His final words are: "I am absolutely certain they were Eiders. There is nothing approaching them in size and plumage."—WALTER GREAVES.

SOME NOTES ON THE PYGMY SHREW (*SOREX MINUTUS*)

T. HYDE-PARKER

THE Pygmy, or Lesser Shrew, is the smallest of British mammals; indeed, with but one exception, the smallest in Europe. Nowhere so plentiful as the Common Shrew, *Sorex vulgaris*, though perhaps recorded oftener in the South than the North of England, it is, strangely enough, fairly common in Ireland, and is also to be found in the Hebrides, in both of which localities its larger relation is unknown. Possibly, however, it occurs more frequently than is generally suspected; for of those few who happen on a dead specimen, and are sufficiently observant to note its diminutive proportions, the majority would probably dismiss it as an immature Common Shrew. The body is, of course, a good deal smaller; the tail, being roughly of the same length as that of *S. vulgaris*, seems comparatively much longer; and there are also slight differences in dentition and in the proportionate size of the feet.

Of the four occurrences which I have recorded in this parish, two specimens were found by the roadside, and two were caught in a mouse-trap in the garage—the latter to my great regret, for, while an evident weakness for cheese proved their downfall, the staple food is, of course, insects, mostly of a noxious nature from the gardener's standpoint. Besides comparing measurements with those in various text-books, I had the curiosity to weigh one, and found it turned the scale at 47 grains—or roughly three-quarters of a drachm! The last one was trapped in December last, and rather fortunately, on the following day, I found a dead Common Shrew, so was able, for the first time, actually to compare the two species. It was then evident that the Pygmy Shrew presented a slighter appearance generally, both body and head being slimmer in proportion to the length. The under parts, too, were lighter in colouring, and both snout and tail more hairy.

Altogether, this tiny beast forms an interesting study; and, while one is always struck by the gigantic in animated nature—as, for instance, the 63 ft. Sperm Whale recently stranded near Reighton—there is, perhaps, to the contemplative mind, something even more awe-inspiring in the infinitely small.

REVIEWS AND BOOK NOTICES

Bird Behaviour, by F. B. Kirkman, pp. 232, illustrated by 30 plates and 6 diagrams. Nelson, 7/6. Mr. Kirkman is well known to

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all ornithologists as an accurate and accomplished observer of bird life. The work under review summarises the author's observations and experiments with Blackheaded Gulls. This fine study has been spread over a period of thirty years and constitutes a very complete account of the doings of an interesting species, and attempts to analyse the mentality of the bird as exemplified by its reactions to the author's numerous experiments. One interesting investigation is that of egg substitution. Mr. Kirkman found big differences between individual birds in regard to their tolerance of substitutes for their eggs. Some gulls appeared suspicious of anything which was not a good imitation, others accepted wooden 'eggs' painted a glossy red colour and one pair of birds actually accepted a tin box which was so large as to be visible when the bird was brooding it. In discussing such a difficult subject the author has wisely confined his attention to one species and in doing so, he develops a technique which might well be applied by other naturalists to many species.

The World of Science, by **F. Sherwood Taylor**, pp. xvi+1,064, with 677 illustrations. William Heinemann, 8/6. There is a definite trend nowadays to revive that 'Science subject' of the nineteenth century known as Physiography. While few people wish to become chemists or botanists or astronomers, it is good for all to have an elementary knowledge of the structure of the Universe, the fundamental truths and theories of science, and an intelligent acquaintance with biological principles. The trouble is to present all this in a manner suitable for the person who has not had a scientific education.

Dr. Taylor has succeeded in the difficult task of including in one cheap volume a complete preliminary survey of all the great mass of present day knowledge known as Science. The value of his book is enormously enhanced by the clarity and accuracy of its expositions, which are helped out by some of the clearest diagrams we have ever seen. Another merit of this book is that it can be dipped into at any point. For instance, one can read Chapter XIV on 'How sounds are made' without having previously studied the first thirteen chapters of his book. *The World of Science* can be strongly recommended for school and public libraries and will be of very real value to the harassed science teacher searching for methods of presentation of his subject.

NEWS FROM THE MAGAZINES

Science Progress for April (Vol. XXXI, No. 124, price 7/6) has articles as follows: 'The Beilby Layer,' by G. I. Finch—an essay on the work the late Sir George Beilby on the nature of the glazed surfaces of metals, numerals, etc., produced by mechanical polishing; 'Discrete Spacetime—A Kinematographic view of the physical world,' by Ludwik Silberstein; 'The Layer-Lattice in relation to Mineral Chemistry,' by A. Brammall; 'The applications of floating equilibrium to the determination of density,' by H. Irving; 'Bitumen: its sources, development and use on roads,' by Percy E. Spielmann. These are followed by the usual quarterly summaries of recent advances in Science and there are numerous book reviews.

The Entomologist's Record for January contains 'An Unusual Freak of *Lycaena bellargus* Rott., 1775,' by T. B. Fletcher (with plate); 'Orthoptera in Britain in 1936,' by M. Burr; 'Euplecti as Myrmecophiles,' by H. Donisthorpe; 'Random Notes on Argentine Collecting.' 3. The

Riverain Forests of the Chaco-santafecino,' by K. J. Hayward ; Notes on Collecting, etc. ; Current Notes and Short Notices ; and supplements 'The British Noctuae and their Varieties,' by H. J. Turner and 'Butterfly Races of Macedonia,' by R. Verity.

The Entomologist for February contains '*Ptychopoda aversata* L. : Notes on breeding and on the genetic relationship of the plain and banded forms (Lep. Geometridae),' by C. N. Hawkins ; 'Some thoughts on the genus *Agapetes* Billb. (*Melanargia* Meig.),' by J. A. Symes ; 'The influence of bird migration upon the distribution of mimetic species of Lepidoptera,' by A. F. Rosa (with plate) ; 'Indo-Australian Hesperiidæ : Descriptions of new Genera, Species and Subspecies,' by Brig. W. H. Evans ; and several Notes and Observations.

The Entomologist's Monthly Magazine for February contains 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe ; 'Notes on *Cionus scrophulariae* L. Infesting a South African Plant *Phygeliu capensis* E. Mey, by H. Scott (with plate) ; 'Some New Species of Indian Heteromera (Col.) (3),' by K. G. Blair ; 'A New *Diplatys* (Dermaptera) from Belgian Congo,' by W. D. Hincks ; 'Observations on the British Psyllidæ, I,' by G. H. Harrison ; 'The Parasites of British Birds and Mammals. XI. Records of *Ornithomyia* spp. (Diptera, Hippoboscidae) from British Birds,' by G. B. Thompson ; and several shorter Notes.

The Entomologist's Monthly Magazine for March contains 'The Parasites of British Birds and Mammals—XI, Records of *Ornithomyia* spp. (Diptera Hippoboscidae) from British Birds,' by G. B. Thompson ; 'Two species of Coleoptera new to Science,' by A. A. Allen (*Homalota* (*Epipeda*) *donisthorpei* and *Corticaria æquidentata* from Windsor Forest) ; '*Barypithes curvimanus* Duval in Ireland. An addition to the British List,' by J. N. Halbert ; 'Further records of *Eburia quadrigeminata* Say,' by F. R. Cann ; 'Results of the Oxford University Expedition to Sarawak (Borneo), 1932. Three new species of Lamiinæ (Coleoptera Cerambycidae),' by Dr. S. Breuning ; 'On the larval characters of *Anthia* (Coleoptera Carabidae),' by F. van Emden ; 'A new ichneumonid (*Scopinenus pygobarbus*) parasitic on *Nematus proximus* Lep. (Hym. Tenthredinidae) in Britain,' by M. Carleton (Long Ashton, Bristol) ; 'Description of a New Genus and Species of Ichneumonidae,' by C. A. Roman ; 'The Economic Status of *Elachiptera cornuta* Fall.,' by C. L. Walton ; 'The insect and allied fauna of Cultivated Mushrooms—III,' by M. D. Austin ; 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe ; and several shorter notes.

The Entomologist's Record for March contains 'Cornish Notes, 1936,' by C. Nicholson ; 'Macrolepidoptera. Collecting Notes for 1936 in South Devon and elsewhere,' by Capt. C. Q. Parsons ; 'A Contribution to our knowledge of the Lepidoptera of the Islands of Eigg, Canna and Sanday,' by G. H. Harrison ; 'Notes on Collecting, etc.' ; 'Current Notes and Short Notices' ; 'Obituary. A. B. Shelkovnikov' (with plate) ; and supplements, 'The British Noctuae and their varieties,' by H. J. Turner ; 'Butterfly Races of Macedonia,' by R. Verity ; and '*Trypeta vectensis* sp.n. and other new or little-known species of Trypetidae (Diptera),' by J. E. Collin (Eight species new to Britain).

The Entomologist for March contains 'Observations on the biology of certain British Psyllidæ' (II—Hibernation, Host and Shelter plants), by G. H. Harrison ; 'British Lepidoptera Collecting, 1936,' by C. G. M. de Worms ; 'Lepidoptera at night in a Chiltern beechwood,' by S. B. Hodgson ; 'Some Odonata from Livonia (Latvia),' by J. Cowley ; 'Indo-Australian Hesperiidæ : Descriptions of new genera, species and sub-species,' by Brigadier W. H. Evans ; and numerous notes and observations.

THE RISE AND PROGRESS OF COLEOPTEROLOGY IN YORKSHIRE

E. G. BAYFORD, F.R.E.S.

(Being the substance of the Presidential Address to the Y.N.U., at
Barnsley, December, 1936)

IF, at any time, you have climbed a steep hill in the company of an aging man, you may have noticed how, at more or less frequent intervals, he will stop and invite you to look back and admire the view. Of course you acceded to his wish but, it may be, in your irreverent heart of hearts, you thought it was all bunkum, and the old fellow was merely out of puff.

It is in the guise of that aging man that I invite you to look back with me from this point over the uphill climb of the last 150 years and consider :

THE RISE AND PROGRESS OF COLEOPTEROLOGY IN YORKSHIRE

Although the number of beetles known to science is something like 170,000, it is remarkable that only a comparative handful are known and recognised by the ordinary individual. In the British Isles, the fauna of which is a fragmentary and diminishing one, we have rather less than 3,500 different species, and out of that number it is doubtful if more than half a dozen are known and recognised with certainty by the average person who may be familiar with perhaps three others by their names only.

The reason for this is not far to seek. Beetles are, by nature, unobtrusive and retiring. They do not, like Butterflies and Moths, flaunt their beauty abroad, and so force themselves upon our attention, nor like ants and social bees and wasps, impress us with the activity of their massed associations, nor like locusts by over-running vast expanses of country and producing wide-spread devastation.

On the contrary, Beetles remain mainly hidden and unseen. Where the species are destructive, the injury is only revealed when the work of destruction has been accomplished and the insects gone, or, in the case of beneficial species, their good works pass unnoticed for the same reason. Nevertheless, it is difficult to imagine a time when man's curiosity was not aroused by a few of the Beetles whose activities bring them more than usually into the open. One of these undoubtedly was the sacred beetle of the Egyptians, *Scarabæus Ægyptiorum* Latr. This species shares with other allied species a curious deformity, viz. : the absence of feet on the front pair of legs. This deformity furnishes proof of the keenness of observation in primitive man, for all the native drawings of this insect to the earliest known example show it. The fact was seized upon by Fabre, the Homer of Entomology, in his Study of the Sacred Beetle and others, as an excuse for one more gibe at the doctrine of Evolution to which he had a rooted objection. The larva has the full complement of six perfect legs of the usual Scarabaeid type, the loss of the front feet taking place during the pupal quiescence. In the allied families which possess these feet, they are protected from serious injury during digging by the outer projections at the apex of the tibiae, in the inner hollow of which they lie in safety during the arduous labour of burrowing in the ground.

Such observations as these, interesting though they are, from an historical point of view were of the popular as opposed to the scientific and gave rise to a body of fanciful interpretations to account for many things that were then, and for many centuries afterwards, imperfectly understood.

Gropings after scientific truth may be dated from the time of Aristotle, that master mind of 300 B.C., whose name for Beetles, Coleoptera, has ever since held the field as being at once both accurate and descriptive.

The next great Naturalist worthy of consideration is the elder Pliny, who met his death in an eruption of Vesuvius in A.D. 79.¹ The twenty-eighth chapter of his eleventh book treats of beetles, but only in a general and perfunctory way. Stag Beetles, Dung Beetles and Glow-worms are the only kinds he mentions by name.

From that time until the advent of Conrad Gesner, little was written of any note. Gesner, who was born of poor parents at Zurich in 1516, was an original and indefatigable student. Here we are concerned with his Natural History labours only. He commenced to publish a comprehensive work on the subject, and had issued five folio volumes on the Vertebrates when he died at the early age of 49 in 1565. His papers on the Invertebrates came by purchase into the hands of Joachim Kamerarius, and later into those of Dr. Thomas Penny, a noted botanist who died in 1589. The MSS. of Gesner and Penny were purchased by Dr. Thomas Moufet, and he also acquired those of Edward Wotton, who died in 1555. Moufet was not only an observant Naturalist but a diligent student. He set about the task of arranging this mass of material in order to write a book on insects. He had completed this in MS. when he died in 1604 and his work remained unpublished until 1634, when Sir Theodore de Mayerne, Physician to Charles I, who had purchased it, saw it through the press.²

To England, therefore, belongs the honour of being the first country to produce a scientific work dealing exclusively with insects. On the title page, Thomas Moufet acknowledges his indebtedness to his three predecessors. Yet continental writers endeavour to rob him of his rightful share in the book and when a copy comes up for sale, a note is usually attached to the effect that 'although this is said to be by T. Moufet it is really by Conrad Gesner.' No doubt the foundation of the work was laid by that great Naturalist, but no one who studies the work can doubt that however small may be the contributions of Wotton and Penny, the additions made by Moufet are considerable. Take, for example, his account of the large Blatta at Peterborough Cathedral and the interesting case of Lady Penruddock. These could not possibly have come from Gesner or anyone other than Moufet.

The study of Entomology, like that of Botany, was not for the sake of Entomology and Botany as such, but for that of Medicine, and in this book we find ample proof of the fact. My copy, which has passed through several hands during its existence of three hundred years, was at one time the property of a native of York, Robert Nares, whose *Glossary or Collection of Words, Phrases, Names and Allusions to Customs, Proverbs which have been thought to require Illustration in the works of English Authors, particularly Shakespeare and his Contemporaries*, London, 1822, is a work of the utmost importance. Those who are interested in the subject will do well to examine the excellent woodcuts with which Moufet's work is adorned. Most of the species figured are well drawn and easy to recognise, especially perhaps that of the Musk Beetle. Moufet draws attention to the truly fragrant and sweet smell which this beetle gives off and compares it with musk and cinnamon. This comparison with musk is so persistently made by many authors that one is led to conclude that either the smell of musk has changed very much or that the smell varies widely in different specimens. I have not handled sufficient living specimens from different localities to form any sound judgment upon the question, but in those which I have the smell was more like attar of roses than musk. Be that as it may, I agree with Moufet that it is truly fragrant and sweet. It is the most agreeably-scented insect of which I have any knowledge.

Moufet's work deals with insects from all parts of the globe and we have to come down seventy years to find a work confined to British insects. This is the *Historia Insectorum* of John Ray,³ to which was appended a work on British Beetles by Martin Lister: it bears the date

1710. As Lister lived for some ten years in York it is possible that some of the species which he refers to Northern England were known to him to occur in Yorkshire, but while Lincolnshire and Nottinghamshire are named our county is not mentioned. The bulk of the species he enumerates, amongst which are five belonging to the order Hemiptera, not then differentiated from the Coleoptera, are from Cambridgeshire, where he found *Aromia moschata* L.

With the publication of the works of Linnæus, the study of Entomology received a great impetus. England shared in the general advance which was soon to make itself felt in Yorkshire.

The next work dealing with the Coleoptera of the British Isles was written by Thomas Marsham, Treasurer of the Linnæan Society, and was published in 1802.⁴ He gives localities for quite a number of species. One of these is stated to be in our county, but this is an error, as the place happens to be in Cumberland. The number of species he describes is 1,299, rather more than one-third of the number known to-day.

Yorkshire first takes a definite place in the study of Coleoptera with the advent of William Spence, of Hull. He was a young man of 22 when he took up the study, and soon made the acquaintance of the Rev. William Kirby. The friendly intercourse resulted in their collaboration in a work of the highest importance and value, familiarly known as Kirby and Spence's *Introduction to Entomology*.⁵ The first volume of this work was issued early in 1815, the second in 1817, and the third and fourth in 1826. The first two volumes have gone through many editions, the best being the sixth issued in 1843; after this date they were issued in one volume form, printed in smaller type; the last edition, I believe, was the eighth, completing 13,000 copies, in 1865.

In the chapter on hybernation, he tells us that 'in the early spring of 1805 (to me a memorable one since in it I began my entomological career and had anxiously watched its first approaches in order to study practically the science of which I had gained some theoretical knowledge in the winter) insects were generally out by the middle of March; and before the 30th I find, on referring to my entomological journal, that I had taken and investigated (I scarcely need add, not always with a correct result) fifty-eight coleopterous species. . . .'

In 1815 he published in *The Transactions of the Linnæan Society* 'A Monograph of the genus *Choleva*,' which gave him European fame. The fact that thus early in his career he was able to describe seven valid species new to science is sufficient evidence that his critical acumen was of a very high order. This genus is still a difficult one to master. Andrew Murray in 1856, going over the same ground, paid him a well-deserved tribute by writing, 'Mr. Spence was the first author who brought the genus into something like order.' Among the many correspondents who submitted specimens to him were J. Atkinson, of Park Square, Leeds, and the Rev. J. Dalton, of Copgrove, after whom Stephens named a variety of the common *Sphæridium scarabaeoides*.

He discovered numerous species in Yorkshire, not then known to occur elsewhere in England, among them being *Nebria livida*, still one of the specialities of our north-east coast line.

Spence himself had several species dedicated to him by British and continental entomologists, but most of these names have been sunk as synonyms owing to the operation of the law of priority. Two at least remain to keep his name before the eye of the coleopterist, *Ptiliolum Spencii* Allibert and *Apion Spencii* Kirby.

Spence was a pioneer of what we now call economic entomology, or the study of insects in their relation to human economy. Here he had the encouragement of the then President of the Royal Society, Sir Joseph Banks. He was a prominent citizen of Hull and a pillar of strength in its Literary and Philosophical Society. A marble bust, showing him in later life, by Marochetti, which was presented to the Society by his

son, W. B. Spence, is now in the Hull Museum. The Curator, Mr. Thomas Sheppard, a past president of this Union and a loyal son (by virtue of long residence, although not a native) of Hull, has written a splendid sketch of his life which appeared in *The Transactions of the Hull Scientific and Field Naturalists' Club* in 1907.

Spence was in his seventy-sixth year when he died in January, 1860.

In 1819 appeared *The Entomologists' Useful Compendium* by George Samouelle. However unsatisfying this work may appear to the modern entomologist, it must have been a great boon to his predecessor of the early part of last century. 'Useful' well describes it. Besides giving descriptions of a large number of species of all orders, it gives localities, habitats, times of appearance, food plants, and other germane information. *The Field Naturalists' Handbook* by the Rev. J. G. and Theodore Wood, published in 1880, is formed on the same plan, and is a striking proof of the usefulness of this earlier work.

Only four species of beetles are given Yorkshire localities and two of these are from Hull, no doubt contributed by William Spence.

In 1832 and 1833 the same author published *The Entomological Cabinet*, in which he gave three beetles Yorkshire localities.

The Index to this Useful Compendium was issued separately, printed on one side only for labels. This was a new departure and must have been a great boon to the entomologists of this country. My copy is inscribed 'The Barnsley Literary Society,' and bears internal evidence that some student of entomology, no doubt belonging to the Society, had impressed it into his service, for the names of a large number of species have been cut out for labelling purposes. The names of four genera have been removed, but without any related species, in all probability because the collector did not feel himself qualified to determine them. Fifty-six species belonging to thirty-six genera remain. If these species were rightly determined the collection cannot have been confined to this district, or conversely, if all the specimens were taken locally some of them were wrongly determined, *e.g.* *Carabus glabratus* Payk. and *Silis ruficollis* F. Some others, which are still to be met with in the county, although of rare occurrence, may have been found here, for it must be pointed out that at that time Barnsley was only a small town with a population of 9,000, more agricultural than industrial, and much more extensively wooded than it is to-day. This early list of species, although for many reasons it lacks any basis of authority, is still not lacking in interest, and deserves a place in any study of the local fauna.

A great step forward was made when on the 1st May, 1827, was published the first part of *The Illustrations of British Entomology*, by James Francis Stephens, dealing with the Mandibulate Orders, of which the Coleoptera took first place. They required five volumes, the last part of which bears the date 30th April, 1835, thus covering a period of eight years. A condensation of this great work was issued in 1839 as *A Manual of British Coleoptera or Beetles*. In the 'sixties and succeeding years it became somewhat of a fashion to sneer at these works, but of late I am glad to note the works of James Francis Stephens are receiving the credit they justly deserve. When we remember the many disadvantages under which he laboured, and the limited assistance that could then be obtained from continental authors, the wonder is that his mistakes, many though they were, were not vastly more. One fact alone speaks volumes, from 1839 no complete work on British Coleoptera was published until 1873 when Cox's Handbook appeared. It is in Stephen's *Illustrations* that we find records contributed by Charles Cardale Babington, Charles Darwin, Sir W. J. Hooker, and other famous names in the scientific world. Yorkshire contributors were W. C. Hewitson, of York; A. H. Davis, of Halifax; S. Gibson, of Hebden Bridge; L. Rudd and Rev. G. T. Rudd, both of Marton, near Stockton-on-Tees;

and others. These early records are of the greatest interest and value. Charles Darwin has placed on record that 'No poet ever felt more delight at seeing his first poem published than I did at seeing in Stephen's *Illustrations of British Insects* the magic words "captured by C. Darwin, Esq."' He also recounts how on February 23rd, 1829, he 'drank tea with Stephens, his cabinet is more magnificent than the most zealous entomologist could dream of, he appears to be a very good-humoured pleasant little man.' This is the best description of him which I know. When, in 1930, the Royal Entomological Society opened its new meeting room it was desired to adorn the walls with portraits of famous entomologists, I was able to assure them that no portrait of Stephens was in existence.

In my entomological career few things have given me greater satisfaction than the slow but sure rehabilitation of J. F. Stephens' character as an entomological pioneer of the first order. It is perfectly true that he raised many varietal forms to specific rank, but so did Linné and many others. On the other hand I am fully persuaded that some of his species have not received the attention they deserve. One of these is *Bledius Ruddii*, found by Rev. G. T. Rudd on Coatham Marshes and therefore of great interest to Yorkshire coleopterists.

Another point of interest to Yorkshire naturalists in connection with Stephens' *Illustrations* is the association with it of John Obadiah Westwood, whose father was an engraver and die-sinker in Sheffield. He became an entomologist of world-wide celebrity, and wrote many works of which one only needs mention here, viz., *The Introduction to the Modern Classification of Insects*, which may be called a necessary sequence to Kirby and Spence's *Introduction to Entomology*. It was as an artist that he was associated with Stephens' *Illustrations* and was responsible for most of the superb plates which that work contains. It is not too much to say that he was the finest entomological artist this country has produced.

Although he was a Yorkshireman, Westwood had left his native county early in life, and, except by his encouragement to the science, had no part in the investigation of our fauna. Hence our notice of him must be brief.

The study of beetles in Yorkshire was continued by three men, Robert Lawson, Thomas Wilkinson, and the father of a past president of our Union, Prof. W. C. Williamson, all residing at Scarborough. All three did excellent work, and the last named, who became Curator of the Museum, was the first to discover *Nebria livida* F. at Scarborough.

To these we may add the grandson of a Leeds worthy, Rev. W. Hey, who came into Yorkshire as a young man to become the Headmaster of St. Peter's School at York. He was later Vicar of St. Olave's, Canon Residentiary and Precentor of York, Archdeacon of Cleveland and Examining Chaplain to the Archbishop of York. Before coming to York, his name had become known to coleopterists by the discovery at his native place, Ockbrook in Derbyshire, of a beetle which John Curtis thought to be new to science and named after him, *Lissodema Heyanum*. During his residence of nearly forty years in York, he assiduously worked Askham Bog, mainly devoting his energies to the Hydradephaga. His intensive study of its water-beetles has made Askham Bog one of the most famous localities in the United Kingdom.

It was in 1883 when taking a walk through Lower Cliff Wood early in the morning that I noticed an insect I had not seen before resting on the trunk of a tree. This was a specimen of the Longicorn, *Rhagium bifasciatum* F. I still possess this specimen, it was the first great cause of my taking up the study of beetles, and may account for my love of Longicorns, which has never wavered from that day to this. I had no work on the subject; we had no Public Library in those days; but I had a friend, a few years older than myself, who was then the Secretary

of our local Naturalists' Society. He urged me to join, which I did, and in its Library I found a copy of Stephens' *Illustrations*, of which I made full use, in fact I copied out all the generic tables. This MS. was a great boon to me for some months later I left home and removed to Wakefield, where I made the acquaintance of two members of the Wakefield Society who were working on Coleoptera; one of these was E. B. Wrigglesworth, who was for a time the Secretary for Coleoptera of the Entomological Section in our Union. I am afraid he was somewhat of a dilettante and collected sporadically. He had a cabinet, certainly, but, when I was engaged on the Yorkshire list and, by courtesy of the late Mr. Gerard, H.M. Inspector of Mines, I saw it at his home at Worsley, there was nothing to be gleaned from it, the few specimens it contained being of foreign origin, mostly from South America.

The other member was Joseph Wilcock, whose chief study was Conchology, of which he had made a remarkably good local collection. He was an artist who not only made life-like carvings of slugs, but cut the blocks with which his work on the Unionidæ is illustrated. As a coleopterist he had made a fairly good collection. In this brief notice of him I can only add that he was an assiduous worker, and it is to him I owe my introduction to Stephens' Manual, of which up to then I knew nothing. Of course I soon got that, and soon afterwards Cox's Handbook, which served my turn until the classic work of Canon Fowler began to be published in monthly parts. By this time I had removed to West Melton and it was at the adjoining village of Wath-upon-Deerne that I gained the friendship of Dr. W. M. Burman, a man who was not only a good all-round naturalist, with preferences for Lepidoptera, Sericulture and Astronomy, but a kind, wise friend. I succeeded in making him interested in Coleoptera, and as he was able to go further afield for his holidays than I could afford he was able to collect species which could not be found in the neighbourhood of our homes. These he would send to me to be mounted, and thus enabled me to get a wider knowledge of the subject. He retired to Grange-over-Sands, where he died on December 31st, 1906.

I joined the Union in 1889 (the actual date of election was November 16th, 1888) the only working coleopterist in it. Members of the Entomological Committee of to-day can hardly conceive how lonely I felt at its meetings. Entomologist and Lepidopterist were then synonymous terms. The other Orders might not have existed. To exhibit a box of Coleoptera in those days was almost an intrusion. True, the Rev. W. C. Hey was a member of the Union and he really was a good coleopterist, but at that time he had almost, if not quite, forsaken beetles and taken to shells. At the excursions and the sectional meetings Conchology had him every time.

This connection with Conchology is rather remarkable. Joseph Wilcock has been referred to, the Rev. W. C. Hey also, and we now come to another who associated these two branches of natural history.

Gradually the number of coleopterists increased and eventually, in 1897, William Denison Roebuck, the General Secretary of our Union from its formation in 1876 until 1902, devised a plan whereby our individual efforts would be turned to a wider and more definitive use. Mr. Roebuck was a man of very varied interests. As a naturalist he was first of all a conchologist, but he had more than a nodding acquaintance with other branches of science and possessed a good working knowledge of Coleoptera. Above and beyond all this, as a Secretary he was gifted with foresight and was an excellent organiser. When he was satisfied that something needed doing, he knew who could do it, and had sufficient ability to carry his point. In any case the credit of initiating the Yorkshire Coleoptera Committee is due to him. It was at the Annual Meeting of this Union held at Darlington on November 24th, 1897, that the recommendation contained in the Annual Report was adopted and

the Committee was formed 'for the systematic investigation of the Coleoptera of Yorkshire at the Excursions and elsewhere and to assist Mr. M. L. Thompson in preparing the continuation of the List of Yorkshire Beetles commenced by Mr. Hey.'

Of the nine members who constituted that first committee I am now the sole survivor.

From the first Mr. Roebuck was a member, and rendered excellent service. By his death in February, 1919, the Union lost a unique personality whose services to natural science cannot be over-estimated.

The Rev. W. C. Hey came to St. Olave's, York, as curate to his father, the Ven. Archdeacon Hey, and succeeded him as Vicar in 1883. In 1892 he resigned the living and retired to West Ayton, near Scarborough. He inherited from his father the taste for Coleoptera; like him, too, he had a preference for the Hydradephaga. In 1885 he began to compile a list of the Coleoptera of Yorkshire, the first instalment of which appeared in our Transactions, published in 1886. Progress was very slow, the last instalment bringing the list to the end of the Staphylinidæ, being published in 1896. Failing eyesight and impaired health compelled him to relinquish the task, but his interest in the work remained as keen as ever. He was our first Chairman and remained such until the end of 1902, when he declined re-election, but continued a member of our Committee until his sudden death on May 19th, 1909.

For the three years 1902, 1903, and 1904, I was Chairman, and in 1905 M. L. Thompson, who had been Convener from 1898, was elected Chairman, and I succeeded him as Convener. Meanwhile, the compilation of the list was proceeding, but we did not feel sufficiently ready to publish further instalments. Perhaps we never should, but fate stepped in and forced our hands. In 1906 the first volume of *The Victoria County History of Yorkshire* was being arranged, and the plan of this work included a detailed survey of the Natural History and Geology as its first item. The late G. T. Porritt was entrusted with the general editorship of the Insecta and Mr. Thompson and myself were given the Coleoptera. The plan followed by Mr. Hey divided the County into five districts corresponding to the Watsonian vice-counties we still use. The space allotted in the new work was too small to allow us to do this and we fell back upon the three Ridings, giving, where possible, localities in each. Even then we were being bombarded with letters complaining that we were spreading out our work too much, and at the same time we were being pressed for copy. I have worked until five o'clock many a morning and then slunk off to bed for an hour's rest. However, it was rare fun, and at last our list was finished and in print. It duly appeared in the first volume published in 1907.

It has its shortcomings, no doubt, and possibly I know them better than anyone else. On one point, viz. the identification of certain species in the older records, I recognise the possibility of a difference in opinion, and, at one time had thought of writing a paper showing how and why our conclusions had been arrived at. Circumstances arose which prevented this, and it is too late now.

Among those whose assistance was of the greatest possible value was Dr. H. H. Corbett, of Doncaster, whose friendship with me is one of the precious memories of my life. He was an original member, and Convener of our Committee from 1908 to 1913. Besides being an excellent coleopterist, he was an able all-round naturalist. His death on January 5th, 1921, was a great loss to our Union and to all who had the happiness to know him.

The death of M. L. Thompson is so recent that I have little need to say more than that he was, except myself, the last member of the first committee. For the greater part of its existence he was in office, and rendered great service to the Union. His genial personality was known to most of us and by those who knew him best his loss will be felt most.

He joined the Union just one year after I did and our friendship once established remained to the end. It is some satisfaction to know that his collection has been saved from dispersion or destruction, and, in all probability will be of the greatest service in his beloved Cleveland, where it is preserved and in good hands.

It might be thought that when our list was published that the work of the Committee was completed and the time had come for it to be dissolved. On the contrary, we set out to show how incomplete our list was, and to-day our Recorder, Dr. Fordham, would tell us we have passed the 2,000 mark, and not a year passes but adds to our knowledge of the distribution of species in Yorkshire. But the unity of purpose is no longer necessary, and members are now more free to indulge their individual preferences for phases other than distribution. The intensive study of the exotic family Passalidæ by Messrs. Hincks and Dibb is a case in point. The section of the Coleopterorum Catalogus dealing with this family has given them a world-wide reputation and I have no doubt the Monograph on which they are now engaged, which will occupy some years of their leisure, will, when published, place them in the front rank of systematic coleopterists. In making this statement it will be noticed that I have ceased to look back, and am concerned with the future. The future lies with the younger members, and so . . .

Having now brought our survey of the subject down to the present time, it may not be out of place to consider the needs of the future. One factor of great importance makes it most desirable that this study of the distribution of species should be continued. This is the change in the countryside which has taken place during the past twenty years, and is still continuing. Large areas of woodland have been denuded of their trees with the consequent loss of the fauna attached to them. The draining of ponds and swampy lands, and scattering semi-detached houses over their sites has had a like result. Against this loss there will be some slight set-off in the newer fauna which will follow in those places where re-forestation takes place. This re-forestation almost invariably takes the form of conifers, in place of oak, ash, birch, and sycamore. Conifers are of quicker growth, and may be planted closer together. As a result they have none of the luxurious and varied undergrowth which is such a feature in the older woods, where oak was the dominant tree. With the undergrowth will go the fauna attached to it. The most prominent member of the newer fauna is *Tetropium Gabrieli* Weise, which is attached to larch and was first introduced into this country from Switzerland and has already become established in some parts of our own county.

The study of distribution will remain a necessity, but there is no reason why other lines of research which appear to be equally necessary should not be undertaken. Here are three which promise great results to the persevering enthusiast. The cause or causes of the spread of melanism in Lepidoptera has been sought for many years. Despite the efforts of Lord Walsingham, G. T. Porritt, Ben Morley, Dr. Harrison, and Mr. Garrett, no solution has been reached which will satisfy all the facts. Now melanism is not confined to the Lepidoptera; numerous instances occur amongst Coleoptera, and no doubt in other Orders as well. A careful collection and collation of all the known cases in all Orders studied from every point of view, might bring us nearer the truth.

Then there is the problem of retarded development. Why should some larvæ, or pupæ, of the same brood take longer than others to mature? It is not uncommon in some species of Lepidoptera to remain in the pupal state one year longer than others from the same batch of eggs, and I believe there are instances of this in the Diptera. But these cases seem trivial besides those which occur in the Coleoptera. The longest case on record, so far as I know, occurred in London over one hundred years ago, when a Buprestid emerged from the top of a desk,

which had been in the same office nearly thirty years, and when the surface was planed the track of the larva was exposed. The beetle was a European species not indigenous to Britain. The egg must have been laid in the tree, probably before it was cut down, but certainly before it was removed from the wood where it had grown. Sawed into slabs, made into a desk, and installed in the office, thirty years passed before it emerged as a mature insect. In the ordinary course of things, three years, or in extreme cases, four years, would have sufficed. In which stage, if not in all, this retardation took place we do not know. I draw attention to this because a similar case has quite recently come under my notice. A larva which had eaten its way out of a piece of furniture was brought to me three weeks ago. The article has been in the house of its owner since it was made fifteen years ago. I secured some of the wood in which the larva was feeding and I am hoping to be successful in rearing it to maturity. Here again the same questions arise, at what point in the life of this insect did retardation take place, and what is the cause of this retardation. If we only knew the answers to these questions they might explain the appearance at fairly long intervals of swarms of an individual species, which pass away and occur but rarely until the next visitation. The phenomenon is worthy of keen investigation.

But the most pressing need is for the study of life history, that of very few species being fully known. It needs but a glance at the biological portion of the *Coleopterorum Catalogus* to see the truth of this. There are many excellent reasons for this neglect : the repulsive nature of the food in some cases makes it imperative that such larvæ must be reared at some distance from human dwellings ; the length of time required by most species in which to mature, and also the difficulty of making close and extended observations, because the larvæ live in seclusion, securely hidden away. These are some of the many obstacles which beset the path of the student of the biology of beetles. One has only to read the works of Fabre to realise this. Progress will be slow, and no one, however well equipped he may be with enthusiasm, perseverance, versatility of judgment and, above all, leisure, can hope to accomplish more than a comparatively small number in a long lifetime. This is not intended in any way to be discouraging, but the very opposite. Had I been left to my own devices I should have chosen this side of the subject, but the necessity to carry out the investigations for which our Coleoptera Committee was formed, decided otherwise. Nevertheless, I have done something in this direction, and if I might presume to offer advice on the subject, I would say to the biological student, ' Begin by assuming that nothing is known of the species you are dealing with ; and make a full and careful description of the larva you wish to rear.' If only I had done that I should have known more and the world would have shared that knowledge with me. In most cases I committed the folly of assuming that everything was known, and all I needed to do was to satisfy my curiosity and prove my ability to rear the larva successfully. A glaring instance of this folly was in the rearing of some larvæ which I found in Wheatley Wood in 1890. On maturing in 1891 they proved to be *Pyropterus affinis*, a beetle which until that time had only occurred in the British Isles at Killarney, where it was taken in 1866 by the late J. R. Hardy, and the year following Rev. A. Matthews found it fairly common in Sherwood Forest. Since my rearing it from this Doncaster locality, it has been found in Scotland. The only individual taken in a free state in Yorkshire was taken by Vincent Corbett on July 7th, 1903, in Wheatley Wood. While a student at Cambridge he entered H.M. Forces and was killed in action on October 17th, 1918. Capt. Corbett was the only son of Dr. Corbett. In only one case did I do the right thing, and that was in the rearing of *Drilus flavescens* Ol. Really, the credit was due to the bad draughtsmanship of the late Prof. Westwood,

whose woodcut of the larva is so little like the original that I felt it imperative to try my hand at a better description. Years afterwards I had the gratification of seeing my work listed as one of two complementary studies of the biology of this curious insect. The larva is in every way a strange-looking creature, and is wonderfully adapted to its predatory life, and admirably protected against the dangers incidental to it.

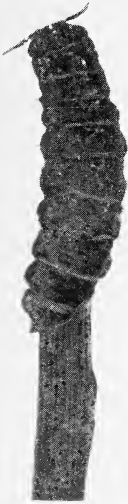
I will now carry this story a little further by publishing a photograph of the virgin female of this species. So far as I know, no figure of this has ever appeared either in this country or abroad, and it is now shown for the first time. The figure which has hitherto done duty was first made by Wilson, and has been copied by Spry and Fowler in this country and by Reitter, Kuhnt, and others abroad, is made from a gravid female. There is no need for me to point out the unlikeness of the two figures, it must be apparent to everyone. It is, indeed, quite as great as the difference between the larva when young and active and the same when full-fed and lethargic.

This insect is not found in Yorkshire, but is confined to the South of England, where the male is met with fairly frequently, but the female is of rare occurrence. I owe my acquaintance with it to the kindness of a friend, who was on holiday and was so struck with the extraordinary appearance of the larva, which he came upon by accident, that he boxed it and brought it to me. The world of science is a real democracy, it knows no bounds of nationality or religion, it has no grades of society, but is an association for mutual help in furthering the acquisition of knowledge. I have had many instances of help such as the one I have just mentioned, and I hope I have not neglected to help other branches of study when opportunity offered.

And now, having looked back over the uphill climb, I look with confidence to the nearer heights, and close with the encouraging word, 'Forward.'

WORKS QUOTED

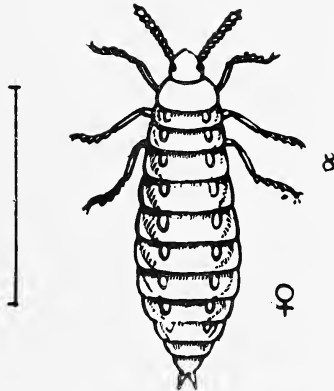
- ¹ *The Historie of the World*, commonly called *The Naturall Historie of C. Plinius Secundus*. Translated into English by Philemon Holland, Doctor in Physicke. (London : Printed by Adam Islip, 1601.)
- ² *Insectorum sive Minimorum Animalium Theatrum* : Olim ab Edvardo Wottono, Conrado Gesnero, Thomaque Pennio inchoatum : Tandem Tho. Moufeti Londinatis opera sumptibusq : maximis concinnatum, auctum, perfectum : Et ad vivum expressis Iconibus supra quingentis illustratum. (Londini ex Officina typographica Thom. Cotes, Et venales extant apud Guliel. Hope ad insigne Chirothecæ, prope regium Excambium, 1634.)
- ³ *Historia Insectorum*. Autore Joanne Raio, Collegii S. Trinitatis apud Cantabrigiænsis, and Societatis Regiæ olim Socio. Opus posthumum. Jussu Regiæ Societatis Londiniensis Editum Cui subjungitur. Appendix de Scarabæis Britannicis, Autore M. Lister. S.R.S. ex Musæi Ashmolæani. (Londoni : Impensis A. and J. Churchill, ad insigne Nigri Cycni in vico dicto Pater-noster-row, M.DCC.X.)
- ⁴ *Coleoptera Britannica*, sistens Insecta Coleoptera Britannicæ indigena, secundum methodum Linnæanam disposita. Auctore Thomâ Marsham, Soc. Linnæan, Londinens Thesaurario, necnon Societ. literar et philosoph. Mancunii socio honorario. (Londoni : Prostat venalis apud J. White, Fleet-street.)
- ⁵ *An Introduction to Entomology, or Elements of the Natural History of Insects*. By William Kirby, M.A., F.R.S. and L.S., Rector of Barham, and William Spence, Esq., F.R.S. and L.S.



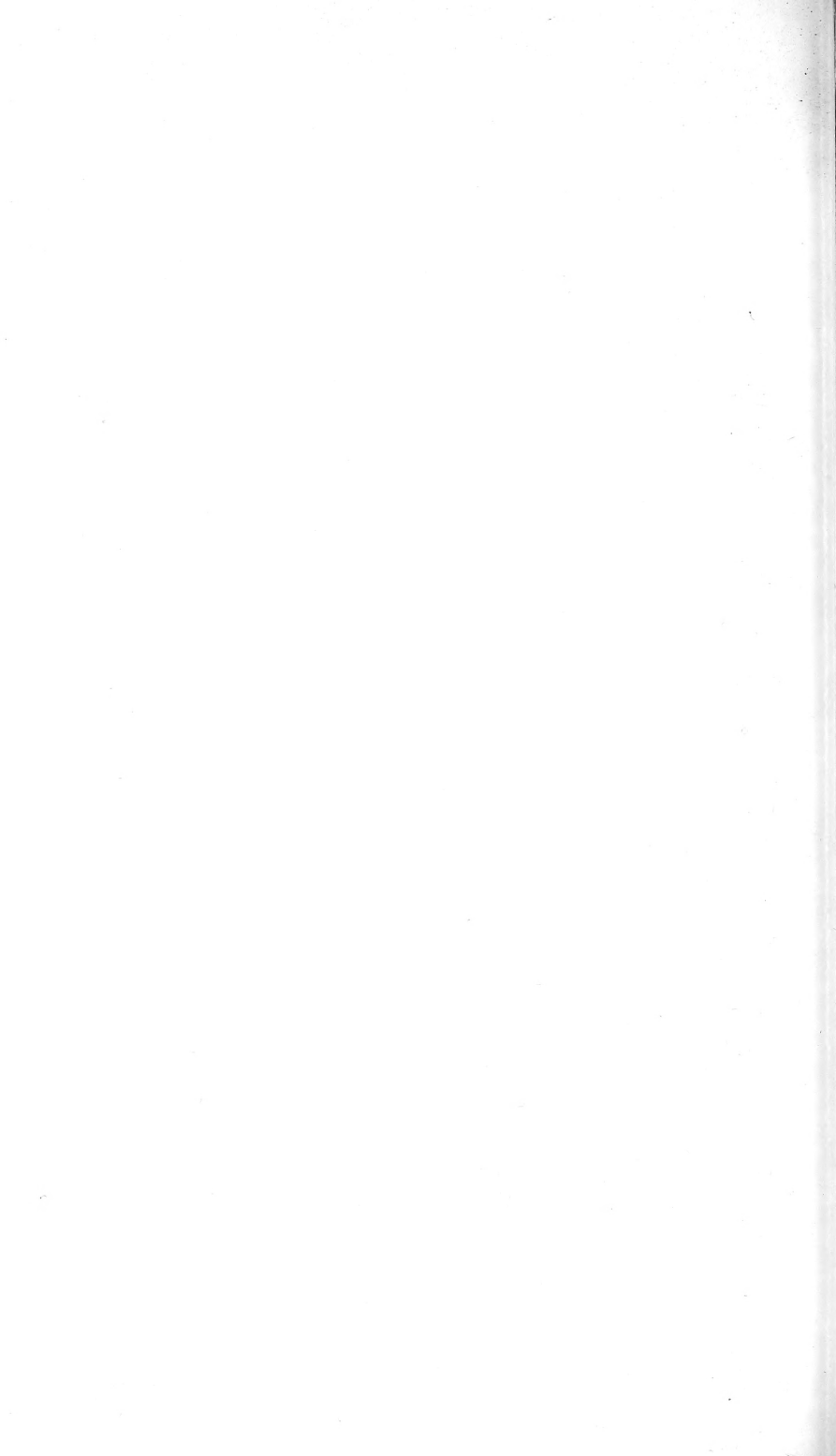
Drilus flavescens
Virgin female seen
from above.



Drilus flavescens
Virgin female side
view.



Photos by] [J. E. Barker
Drilus flavescens
Stock figure of female which has
done duty for over a hundred years.



THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

THE LATE F. ARNOLD LEES, M.R.C.S. (ENG.), L.R.C.P. (LOND.)

[EDITED BY C. A. CHEETHAM]

AUTHOR'S NOTE.—This was originally articulated for the Yorkshire Naturalists' Union from the skeleton framework and discoveries accrued since 1890. Adjusted, checked and revised, sometimes modified in its conclusions as the ascertainment of Distribution compelled since the *Flora of West Yorkshire* sheaved the reliable data to 1888, this 'Supplement' to that work has finally taken a larger scope so as to include both the North and East Ridings, and so is, I submit, more fully describable as a Survey of the Vegetation of England's greatest Shire.

My own labours as crystallized in the present work embrace or take cognizance of the data in Baines' *Flora* of 1840, its Supplement of 1854, Baker's *North Yorkshire* of 1863, and Robinson's *East Riding Flora* of 1902: to these have been added many scores of corrective or corroborative observations, through the courtesy of the compilers, which the years and the investigations of the Yorkshire Naturalists' Union have produced. To some extent this will supplace (not precisely supplant) these and my own earlier volume of 1888.

CONTRIBUTORS

By correspondence and specimens. *Additional* to the names in *Flora of West Yorkshire* (1888), p. 100. Their initials in the text sufficiently indicate them.

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Initials are for the most part used, a reference to the list of their full names will enable their identification.

Contractions and signs.—Fl.=Flora (a published list); Hb.=Herbarium; \pm =more or less (used in the *Hieracia* chiefly following Linton); ♀=female; ♂=male (parents in

hybridity) ; \times = a hybrid ; either placed between the two species names supposed to be the parents, or in front of a specific name conferred before hybridity was fully recognised or for a commemorative purpose given afterwards.

Plan.—The idea of the Supplement is not to multiply locality-records, or repeat those already in the three sectional *Floras* but to bring stational observations up to date and to give a full list of the known Yorkshire Flora.

[In a thesis following the above, Dr. Lees developed a Theory of the changes in Vegetation and all that this implies. He took Clement Reid's *Origin of the British Flora* as his base and then divided the species of plants into Ancients : early and late, with us still or at one time from the later Geological Age and more or less certainly identified in the British and Continental Peat and Lacustrine deposits, and Moderns, natives, species all Post Glacial : some in the earliest British Historic times and others prior to the separation from us by sea of the Continental Rhineland. He shows reasons for placing the various species into these classes. It has not been found possible to publish all this matter, but Lees' manuscript will be deposited in the Leeds Free Library, Reference Department, where it will be available to any who wish to study the subject.

In the following list the name only is given where the species is known from each Riding ; if it has not been found in any Riding this is stated and where the distribution has been found to be wider than stated in the *Flora* or it is an addition to the whole list, the facts are now given.—C.A.C.]

RANUNCULACEÆ

Clematis Vitalba L.

Denizen in all Ridings.

Thalictrum flavum L.

T. arenarium Butcher (*T. dunense* Auct.).

Not in West Riding or East Riding.

Redcar sandhills, teste R. W. Butcher.

T. montanum Wallr.

Not in East Riding.

Gordale Scar, teste R.W.B., where the varieties *virens* Wallr., *roridum* Wallr., and *glandulosum* Wallr. all occur. The majority (? all) the limestone, *T. minus*, of West Riding and North Riding dales belongs to this segregate.

T. Babingtonii Butcher (*T. saxatile* Bab.).

Not in East Riding or North Riding.

Collingham, E. C. Horrell.

Thalictrum umbrosum Butcher.

Not in West Riding or East Riding.

Tees-side, Winch Bridge, V.C. 65, teste R.W.B.

T. alpinum L.

Only in the North Riding.

Anemone Pulsatilla L. Extinct.

A. nemorosa L.

A. apennina L.

Plantation at Well, near Masham, W.A.S.

Adonis autumnalis L.

Grain alien. Malting waste, Mirfield, P.F.L.

Myosurus minimus L.

At Aughton, near Bubwith, Jas. Kendal, see *Naturalist*, 1936, p. 161.

Ranunculus repens L.

R. acris L.

R. auricomus L.

R. bulbosus L.

R. Lingua L.

Old bed of River Aire, Gargrave, 1899, L.R. 1907, two good patches still there, J.B.

R. Flammula L.

R. arvensis L.

R. falcatus L.

Alien. Wheatley, Halifax, 1890, J.A. Hull docks, C.W. Elland, F.A.L.

R. sardous Crantz. (**R. hirsutus** Curt.).

Eccup, 1903, Hb. Craven.

R. sceleratus L.

R. parviflorus L.

Skidby chalk pits, near Cottingham, J. C. Craven, 1898.

R. fluitans Lam.

Not in East Riding Flora.

R. circinatus Sib.

R. heterophyllus Weber.

R. diversifolius with floating leaves, *R. submersus* Bab. without.

***Ranunculus trichophyllus* Chaix.**

Not in North Riding Flora. A plant recorded by L.R. (*Nat.*, IV, 1903) from Otterburn Bell Busk, but I fear some confusion with *R. Drouetii*. Given for V.C. 63-64 by W. H. Pearsall.

***R. Drouetti* F. Schultz.**

Not differentiated in North Riding Flora, but J.P. says ascends to 1,800 ft. on Widdale, below Locker Tarn, Carperby. Given for all Yorkshire vice-counties by W. H. Pearsall.

***R. Baudotii* Godr.**

Not in West Riding Flora. Tees, Coatham Marshes.

***R. Lenormandi* F. Schultz.**

Not in East Riding Flora.

***R. hederaceus* L.**

***R. Ficaria* L.**

***Caltha palustris* L.**

var. *cornuta* Borbas., Old Hodder Bed, Newton-in-Bowland, J.F.P.; only record. var. *Guerangerii* Boreau, Barmby Dun, Dr. H. H. Corbett, Doncaster, 1901; only record. var. *minor* D.C., Cragstones, Bowland, J.F.P., 1895; high swamp on Buckden Pike, 1,700 ft. O.D., J.F.P., teste E.S.M., 1910.

***Trollius europæus* L.**

Hodder banks, Newton, J.F.P. Not in East Riding Flora.

***Helleborus viridis* L. var. *occidentalis* (Reut.).**

***H. foetidus* L.**

***Eranthis hyemalis* Salisb.**

***Aquilegia vulgaris* L.**

Mr. J. E. Lousley has pointed out the variation in form and colour shown in this species in Yorkshire, the sky blue type found on the limestone he says is larger flowered than the plant as found in the south and a maroon coloured flower with much smaller flowers gathered in Orcaber Lane, Austwick, on a grit area approaches the sub. sp. *atrata* (Koch.) of the continent. In West Yorkshire, p. 125, a pale pink form is mentioned from Meanwood.

***Nigella damascena* L. and *N. arvensis* L.**

Have occurred as strays in fields and about ruins at Knaresborough Castle, Jervaulx Abbey, etc.

***Delphinium Ajacis* Reich.**

At Shepley Bridge and Kirkstall goods yard, 1904, C.A.C. spn.

Delphinium consolida L.

Barge waste, Wakefield, J.C., 1912, spn. teste W. B. Turrill.

Aconitum Napellus L.

I now reject this as a classible plant for Yorkshire. It is invariably a stray where we find it, either planted by man or washed out of some riverside garden. The latest notice of it is by the Esk at Grosmont, whence a specimen is sent by E. A. W. Peacock.

Actæa spicata L.

Woods near Kirkham Priory is another station in the East Riding area. In North Riding and West Riding many stations are added as Sulber Nick, Colt Park, Ling Gill, Kirby Malham, C.W. ; Raisghyll, T.B.W. ; Crayfalls, J.F.P. ; Towton (1896), C. E. Stansfield, in the *62nd Annual Report of the Yorkshire (Friends) School Natural History Society*.

Pæonia corallina Ritz.

Introduced to the Jungle, Meanwoodside, by Mr. Oates ; it has persisted there (because kept private) for forty or more years.

BERBERIDACEÆ

Berberis vulgaris L.

Rilts (the fruit sold for garnishing, Ripon). On the decline now by reason of farmers' prejudice which leads to its stubbing up, and like *Euonymus*, not maturing fruit regularly.

Epimedium alpinum L.

Denizen. "Traunsfield Hole," a closer localisation than that in West Riding Flora. 1727, Dr. Richardson *in litt. ad* Dillenius (Druce, *Dill Herb*, Vol. LXXXIX).

Fountains Abbey, Dr. R. Deakin, in *Floragraphia*, Vol. I, p. 197 (1837). Planted Ingleborough Hall demesne shown to G.C.D. by R. Farrer. Meersbrook, Sheffield, May, 1865, spns. in Herb., J. Deakin Heaton now in Lees' Herb., Cartwright Hall, Bradford.

NYMPHÆACEÆ

Nymphæa lutea L. (Nuphar Sm.).

Declinent because of water-fouling and traffic disturbance. Fenbeck, Austwick, 1909, J.F.P. Cannon Hall lake, 1909, P.F.L.

N. alba L.

Pond at Copgrove, 1893 ! with J.F. and A.M.

PAPAVERACEÆ

Papavera somniferum L. Alien.

P. Argemone L. Colonist.

P. Rhœas L. Colonist.

P. dubium L. Colonist.

P. hybridum L.

Casual. Occurred on sewage works "tip" at Frizinghall, F.R., 1905 and 1910.

Argemone Mexicana L.

Casual. Occurred on sewage works "tip" at Frizinghall, F.R., 1905 and 1910.

Meconopsis cambrica Vig.

'Undoubtedly native,' small pothole, Ingleborough, 1911, C. E. Salmon, MS. (Possibly head of Long Churn, plentiful, 1936, C.A.C.)

'Wood near Arncliffe with *Geranium lucidum* and *Thalictrum montanum*, surely native,' J.F.P.

Its first record dates back only to 1832; such a flaunting flower should certainly have been spied and put on record by Ray, Lister, Willisel, and Merret.

Glaucium corniculatum Curt. (*G. phoenicium* Crantz.).

Alien on 'tips' in Dewsbury-Mirfield area, P.F.L.

Roemeria hybrida D.C. (violacea Med.).

Hull docks wastes, spns! C.W.

Chelidonium majus L.

Hypecoum pendulum L.

Casual in West York and once upon Hull dock waste. The Carr, Doncaster, 1900, H.H.C. Calderside at Wakefield, J.C. *Eschscholzia tenuifolia* Beuth. and *E. californica* Cham. have also occurred.

FUMARIACEÆ

Corydalis claviculata D.C.

Corydalis lutea Gaertn., and *solida* Mœench.

Barely rankable as natural integers in any area.

Fumaria Boræi Jord.

Not in North Riding Flora. Rare and quite casual ; it and *F. capreolata* L. are not natural to the latitude of Yorkshire, in fact made too much of in the Flora. Still, *F. Boræi* was known to R. Teesdale, 1778, as *capreolata*. Both are on record for 1912 in *Exch. Club Rep.* and *Journ. Bot.*, p. 50, 1913, by Pugsley for Richmond, Hb. C. Bailey, *F. capreolata* ; and Ilkley, *F. Boræi*.

F. muralis Sonder.

Only West Riding Flora. Rampant among briars, in, 1908, Hb. S. M., Calverley.

F. officinalis L.

CRUCIFERÆ

Cheiranthus Cheiri L. Denizen.

Nasturtium officinale Br.

N. sylvestre R. Br., and **amphibium** R. Br.

N. sylvestre somewhat on the decline, and *amphibium* keeping to lower levels about moated sites and canal sides. *N. sylvestre* varies in leaf cutting which when extreme and finely divided is *tenuifolia* Tausch (Swalebank Sessay !), but there is a parallel compounding observable in both *R. amphibium* and *Sisymbrium Sophia*.

N. palustre D.C.

Barbarea vulgaris Br.

A deceiving variety (*decipiens* Dr.) occurs in dry places on rocks in "Yoredale" Quarries at Newton in Bowland, J.F.P. It is dwarf, twiggy, with runcinated lower, and very dentated upper leaves, the siliques somewhat curved and spreading.

B. stricta Andrz.

Not much more than an alien. Clifton Ings, V.C. 62, discovered by Bonner in 1842 and still there, W.A.S. Its incidences can be traced back in Hb. S. King (Flo. Hlx.) to 1842 for the Copley neighbourhood.

True *arcuata* Rchb. I doubt our having in West Yorkshire, the plant of West Riding Flora I now think *decipiens* Druce, and the arable-field colonist, *B. intermedia* Bor. is known only by the 1862 record in North Riding Flora. 'Cultivated fields Bilsdale, Eastertide, and to W. Foggitt as crop alien Thirsk.' The *B. verna* Asch. is a merest casual.

***Arabis hirsuta* Scop.**

The glabrate form with abbreviated pods, var. *curtisiliqua* D.C. has been reported from Arncliffe (West Yorkshire), J.W.C. Scalebor force, Settle, J.F.P.

***A. arenosa* Scop.**

Alien. Meanwoodside, fellmongery, 1907.

A. albida* Stev. Rockery stray.**A. glabra* Bernh. (Turritis.)**

Not in East Riding Flora. Follows the sandy land of the Trias up through Yorkshire by the line of the Great North Road by Thirsk and Leeming Lane into Durham. Wath, Hb. Nicholson, Vol. 8, fol. 155, dated 1830.

Cardamine pratensis* L. Hybrid.**C. Heyneana* Welw. (*C. pratensis* × 'hirsuta').**

New to flora. Noticed in two places, in both with the two suggested parents in their forms of *C. flexuosa* With. (not wall top *hirsuta*) and *C. palustris* Peterm. and in one with *C. amara* also. Meanwood Grove by a mill from a field trough, *C. amara* present as well, one specimen (with smallish white petals) is clearly just halfway between *pratensis* (pollinator) and *sylvatica* as recipient. East Riding, near Gibraltar, River Hull, J.F.R. In 1897 first, still there 1910 (Fl. 66 sub. nom. *dentata* Hayne).

***C. amara* L. var. *umbrosa* D.C.**

Etiolating and varying a good deal. Petals smaller, less contiguous, leaf with narrower pinnæ, anthers hardly livid—but I think all this connotes a hybrid.

Eller-beck, Skipton (Castle) Woods; L.R. (1900) teste T.W.E.

***C. impatiens* L.**

Wooded scrub high up Littondale! J. Whitehead (just too late for 1888 flora). Buckden Gill, H. Wager, 1902=Raise-wood, Buckden, August, 1904, C.A.C. and J.F.P.

Not recorded from East Riding, and no recent confirmation in North Riding.

***C. hirsuta* L.**

Restricted. May be identified on limestone wall tops in most of the Dales early in the year. Large areas in West Yorkshire at any rate are without it; although in suitable damp shady nooks, *C. flexuosa* With.—perhaps as distinct from *hirsuta* as is *impatiens*—occurs even in the busy mill and factory areas.

(To be continued)

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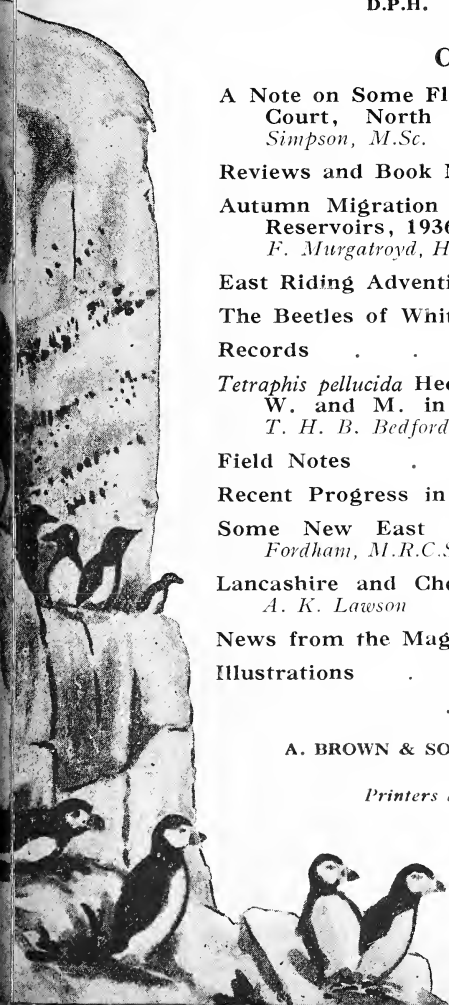
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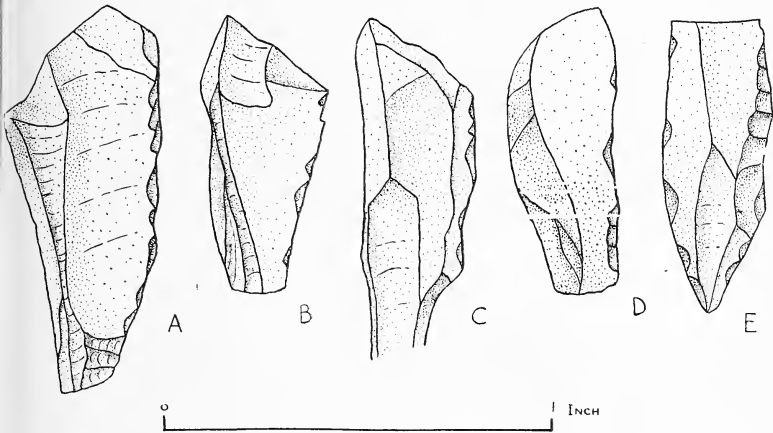
A NOTE ON SOME FLINT ARTEFACTS FROM ORLEIGH COURT, NORTH DEVON

BRIAN SIMPSON, M.Sc., UNIVERSITY COLLEGE, SWANSEA

THE flint artefacts described and figured in this paper are in the collection of Mr. E. H. Rogers, of Torquay, by whose generosity I am allowed to publish this account. They were found in a surface gravel, of doubtful geological age, covering a few acres of land in the neighbourhood of Orleigh Court in the Parish of Buckland Brewer, about four miles south west of Bideford.

While flints have been known for some time from North

FIG.1.



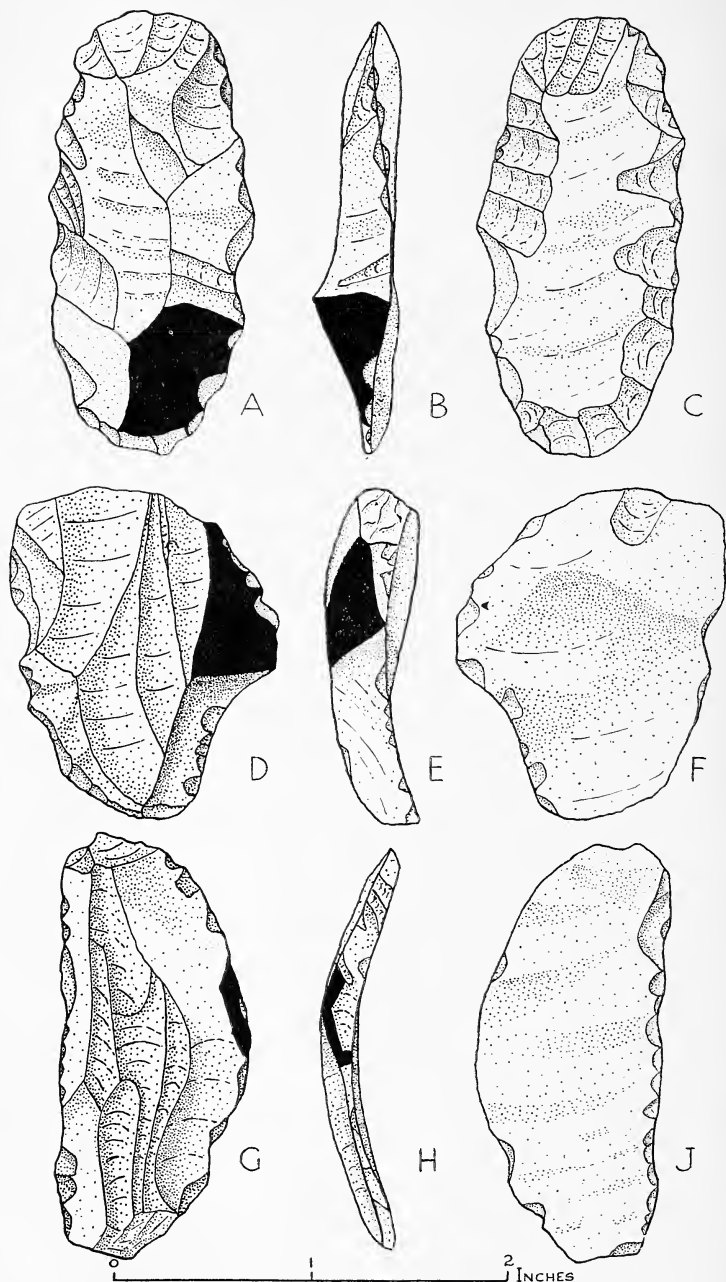
Devon, these are the first unquestionable evidence of the Mesolithic Age which I have seen. They are closely comparable with specimens from many other Mesolithic sites in Britain.

DESCRIPTION OF THE FIGURES

FIGURE 1.

A is a microlith executed in a red flint and is a typical geometric triangular form. A trace of the yellowish red cortex remains. The left hand portion of the flint (throughout the description left and right hand refers to the position in the actual figures) is blunted by steep, almost vertical chipping. Secondary working is finely executed on the right-hand edge. This specimen resembles very closely forms figured by Graham Clark from Marsden in the Pennines, from the Blackdown Industry at Haslemere (1), from Peacocks Farm (2), and also forms figured by Johansen from Svaedborg in Denmark. (3).

FIG. 2.



B is another triangular form in yellowish brown flint. The left-hand edge is blunted in the lower half by flaking along the length, and in the upper half by flaking at right angles to this. The form resembles many seen in the Surrey Greensand sites (1).

C is also a triangular microlith in greyish-white flint. The left-hand edge is blunted by both vertical and transverse flaking. It seems to have suffered some erosion—a characteristic which is not observed in any other of the specimens. Similar forms occur in the sites mentioned in the case of **A**.

D is worked in blue-grey flint showing occasional patches of a whitish patination. The blunting on the left-hand edge is performed by steep flaking normal to the main trends of surface chipping. Similar forms are seen in some of the Northumberland sites (1).

E is fashioned from white flint. The right-hand edge is chipped very steeply, almost normal to the length of the flint. The three major faces shown are almost planar with very sharp angles of intersection. It shows a marked resemblance to forms from the Middle Tardenoisian of Belgium (1).

FIGURE 2.

A, B, C are three views of an artefact in blue-grey flint. The patination¹ is whitish and rather shallow. The secondary flaking is very fine both on the front (**A**) face and on the reverse face (**C**). This form may well be a spear head referable either to the late Mesolithic or to Early Neolithic Age.

D, E, F are views of a borer in yellowish flint. The patina is whitish, not very deep and iron stained. A fine bulbar face is seen in **F**, and fine secondary flaking is seen on the right-hand edge of **D**.

G, H, J are views of an artefact in yellowish flint. A little whitish iron-stained patina is present. There is strong resemblance between this specimen and some described by Johansen from Svaedborg in Denmark (3).

From a consideration of the foregoing description and resemblance of these forms to those from other parts, it would seem that the Orleigh Court chipping floor is of Mesolithic, probably late Mesolithic, Age, which was later influenced by the incoming cultures of Early Neolithic Age.

1. Clark, J. G. D., 'The Mesolithic Age in Britain,' *Camb. Univ. Press*, 1932.
2. Clark, J. G. D., Godwin, M. E., and Clifford, M. H., 'Report on Recent Excavations at Peacocks Farm, Shippea Hill, Cambridge-shire,' *Antiq. Journ.*, Vol. XV, No. 3, 1935.
3. Johansen, Friis. K., 'Une Station du Plus Ancien Age de la Pierre dans la Tourbière de Svaedborg,' *Mém. de la Soc. Roy. des Antiqu. du Nord*, 1918-1919.

¹ The black areas in the figures are showing the areas of patina.

REVIEWS AND BOOK NOTICES

Palæontology Invertebrate, by **Henry Woods, M.A., F.R.S.**, 7th edition, 1937. Cambridge University Press. 221 text-figs., 475 pp. 10/6 net. The 7th edition of this text-book, first published in 1873, has recently been issued revised, enlarged and reset in clearer type, with an improved make-up. The general plan remains the same as in previous editions. The general zoological structure of each group is considered first. The treatment is such that it does not demand from the reader a previous knowledge of zoology. This is followed by descriptions of the more important genera. These clear and concise generic descriptions are, no doubt, one of the main factors which have made the book so useful to the elementary student of palæontology since they enable him to examine a collection of fossils with some hope of naming the main genera. Throughout, the subject matter is treated from a palæontographical rather than a palæontological point of view, that is, the author considers that an introduction to palæontology should be through fact rather than theory. The paragraphs dealing with the geological distribution of each group are the least helpful. They merely repeat what has been more fully stated in the generic descriptions. Little attempt is made to deal with the common types of faunal phase or their implications. A pleasing part of the book is the full bibliography of palæontological works.—R. G. S. H.

Victorian Sea Shells, by **Charles J. Gabriel**, published by the Field Naturalists Club of Victoria, Australia, 1/6. Mr. Charles J. Gabriel, the Honorary Conchologist of the National Museum, Melbourne is to be congratulated on his handbook of Victorian Sea Shells. To the student as well as the collector it is a most helpful work. The author gives some good advice to those taking up the study of conchology in his introductory remarks. The description of the mollusc is well done, while he adds several localities where to find a particular species and much detail and history regarding the same. Miss Joyce Allan, Assistant Conchologist, Australian Museum, Sydney, has made some very fine illustrations; all the drawings are of a high standard and are easily recognised by even a beginner. The colouring of the shells on the coloured plate is true to the living animal, it does not detract or exaggerate the beauty of it. The book is one to be well recommended.—ELSIE M. MOREHOUSE.

The Beauty of Butterflies, with an Introduction by **Julian Huxley**, and introductory text by **Professor Adolf Portmann**. Twelve colour plates from Nature. Batsford, 5s. 6d. This is a beautiful piece of work which will appeal to all naturalists. The Butterflies chosen are about 40 of the large brilliantly coloured creatures of tropical and sub-tropical regions throughout the world. The colour and reproduction is well nigh perfect, and the letterpress is very appropriate. The collection will serve as an admirable accompaniment to the travel books of Bates, Darwin and Wallace. We note that the book was printed in Switzerland.

Between the Two Twilights: Tales of Woodland, Moor and Stream, by **Alan Jenkins**, pp. x+322. John Murray, 7s. 6d. Here is a writer who combines a really sound knowledge of the ways of wild creatures with the rare ability of writing convincingly from the animal's point of view. Mr. Jenkins has a fine style, he does not overdo sentiment, and by keeping to what is definitely known, he avoids the pitfalls which beset the writer whose imagination fills up the gaps in his knowledge. It is hard to choose between these fifteen beautiful sketches, but perhaps we like 'Willow Pattern' best. This essay concerns the adventures of a bitch otter and her family, and it is a piece of really fine writing. The eulogistic note of the publishers, which appears on the jacket of this book, is entirely justified.

AUTUMN MIGRATION ON THE YORKSHIRE MOORLAND RESERVOIRS, 1936

W. GREAVES, V. S. CRAPNELL, F. MURGATROYD, H. FOSTER,
AND G. EDWARDS

CONTINUING our habit of taking special care with the recording of Autumn migrants on a small group of moorland reservoirs, we find from the records for 1936 that this most exciting of hobbies has again justified the eighteen visits which we made to White Holme reservoirs.

The first entry was made on 19th July. Mr. Crapnell being alone—unfortunately for the rest of the observers—for he enjoyed a long and uninterrupted view of an immature Great Northern Diver, one of the rarest of visitors to the Halifax area. The rest of us had to wait until August 2nd for our first bird of passage, one Ringed Plover! The numbers and dates concerning this species are interesting and should be compared, as from them one gets a fair idea of the daily rise and fall in the population.

Ten Lesser Black-backed Gulls were on the reservoir on the 16th and a Reed Bunting rose from the moor. A single Ringed Plover had for a companion a beautiful Sanderling, one of the regular migrants, in small numbers, to the reservoir each year. A few Dunlin were about on the water's edge; still these were probably our breeding birds and not the passage migrants. Two Redshanks and a third bird of similar size fed at a spot devoid of cover, and we gave up a big slice of the afternoon in an endeavour to separate it from its scolding companions. When we did succeed, we found it was a Reeve. A prominent eye stripe and a shorter bill than the Shanks, a back patterned with black, and a rump divided down the centre with black which always showed when alighting, were the identification points. In flight, of course, it lacked the conspicuous white wing bar of the Redshanks, a point which first told us that all three birds were not Redshanks. The wings seemed more pointed and the flight more airy and direct.

We next visited White Holme reservoir on Saturday the 22nd, after having had a Ringed Plover and a Sanderling, probably the same birds, as before, on Blackstone reservoir half a mile away. As soon as the water came in view and as we climbed the embankment we became aware of a duck close in, so retreated awhile to a better vantage point. He proved to be a Common Scoter, so close in that we could make out his orange bill quite plainly. He stayed on the water all day having for company fifteen Ringed Plover, but he was gone on the Sunday.

Gone, too, were all the interesting birds until we reached

the last spit of sand where a small group could be seen feeding. This time it consisted of two Ringed Plover and again one Sanderling.

An evening visit on the 26th did not produce more than a party of five Ringed Plover until we were fortunate to see a Greenland Wheatear. The brilliance of the plumage and the long legs, giving him a fine upright carriage, were the outstanding features. A solitary bird on the shore gave us a good deal of trouble in the fading light. It was the large size and the decurved bill which made us believe it was a Curlew Sandpiper. It was absolutely tame and at twelve feet it still remained unmoved while we jumped a yard wide inlet. At six feet it suddenly rose and called as it flew. A Dunlin! Still we were of the opinion that this was one of the northern variety, so much larger and different in many features was it from the local nesters.

The last day of August provided three Ringed Plover and during the few minutes that we sat eating our lunch, five Golden Plover arrived. Everything seemed quite otherwise, so we made over the moors to Withens reservoir. A fine Pochard was there swimming with a few Teal ducks and we put up three Partridge, uncommon birds anywhere in the Parish.

We now entered upon September, usually the height of the migration season and so the Greenshank, one of our favourite birds, was eagerly awaited, but in vain. Not once during the whole of the season were we fortunate enough to hear his voice. For some time past things had been very 'ordinary,' just a few Ringed Plover and a Dunlin or two nor was 6th September any exception when the list included twelve Ringed Plover, a Snipe, and two Sandpipers. Things began to move by the 8th, however, when on this Tuesday evening in perfect weather we found the reservoir like a sheet of mirror. Not even the tiniest ripple disturbed the surface, a rare event at this altitude of over a thousand feet. As a result of this calm, duck showed themselves conspicuously on the surface and we found amongst Mallard and Teal, one female Shoveller. Upon the muddy shore we had two Dunlin, while rocks at one end harboured the largest party of Ringed Plover yet seen—twenty. As night fell the Gulls came in and their cries and squabbles echoed weirdly in the twilight, cries that were broken only by the clear, beautiful notes of a Redshank and the soft whistle of passing Ringed Plover.

Five days later, on Sunday, 13th September, the dozen miles to the reservoir was travelled again. It was a perfect morning as Mr. Crapnell, Mr. Murgatroyd and I left the car and tramped over to the distant reservoir embankment. Not a breath of wind stirred the long heather, and away from

the road all was silence. We sensed something was 'on' the reservoir quite half a mile away and the glasses revealed a host of Black-headed Gulls flashing white in the sunshine. A cloud of Lapwings rose above the Gulls and a silvery mass of waders shimmered for a moment on the dark skyline, to descend beyond our vision.

Spurred on by the glories of the Autumn morning and all that the reservoir promised, we reached the steep embankment. Three cautious heads rose slowly to behold such a sight as we had never dreamed. The reservoir is a good half mile in length but the far shore, which consists of peaty soil and very soft mud, was lined throughout the whole of its length with hurrying, feeding waders!

In the air above were Lapwings and Gulls, on the water groups of Ducks and a party of Lesser Black-backs and Herring Gulls.

We observed where the groups were and made plans accordingly. While doing so a huge bird about the size of a Goose was seen for the first time on the far shore. The plumage was black and white. The masses were bewildering for an inland reservoir and would have seemed more appropriate on some large estuary.

A party of three Ringed Plover winged by to alight not far away upon a firm sandy arm at a spot which we favour because of the shelter it affords. Hurrying on through midge-infested heather and down a steep, peaty creek to where a mass of rock is situated, we erected a high-powered glass on its stand and scanned the near-by shore. There were the three Ringed Plover and with them a Dunlin. Now more Dunlin and more Ringed Plover further up shore, crowds of them! A whisper from a companion and the glass swung round to where his field glass had picked out some birds near a group of stones. Three large waders with beautiful warm buff breasts and rather long legs, were quietly feeding. They stood in the full sunshine and looked round, then kindly walked along the shore in our direction, still feeding. An alarm caused them to fly a few yards and we got confirmation of our theory that this time they really were Curlew Sandpipers, when each showed a white rump.

Subsequently we had splendid views of them and the long-curved bill was an easy feature to detect. They towered well above the Dunlin more by reason of their long legs than by bulk of body, and by this means could always be picked out in the packs. The Lapwing flock called frequently and as it came by in long undulating line we found it contained fifty birds.

When they alighted the muddy shore seemed alive with them and in the full sunlight they were indeed Green Plovers.

As we made round towards the far shore, still keeping a watchful eye on the black and white Duck, Snipe rose and zig-zagged across the moor and cautious Teal Ducks splashed over the still water to rise and come quacking overhead in two parties of five each. Once we had gained the long side of the reservoir we were right among the birds and for a considerable distance no cover was available. Little parties of waders streamed out over the water to return immediately we had passed on. More Curlew Sandpipers were here and we again noted a female Shoveller. The pied bird had taken off from a creek and came circling round with slow Goose-like beats. When it settled we noticed it had a short red bill, and had it possessed a chestnut band we should have said it was a Shelduck. However, this bird was plain black and white, but eventually after several close views both in the air and on shore we were convinced that this was an immature Shelduck. We later proved this to be correct; indeed, there are few Ducks with short red bills to which species it could belong.

A Wheatear flashing white darted on ahead, and further parties of small waders including Sanderling and Dunlin raced along the water's edge. We had made a complete circuit of the reservoir, marvelling at the variety of its population, when a trio of pied birds rose from some low islands several hundreds of yards from the shore. When they alighted again they had joined a fourth bird. Undoubtedly they were Turnstones. Their rumps and tails in flight established their identity, and it was no wonder that we began to think the supply of desirable species inexhaustible. Continuing on our second circuit and finding a favourable spot upon the muddy shore we sat down upon a raincoat, in the wet earth on the edge of the reservoir. The water at this point would be thirty feet away. Birds which had been feeding here slowly returned and settled down to their feeding again. Immediately before the observers was a group of forty-four waders. Others, besides Gulls, Ducks, and Lapwings settled further up shore. The Shelduck which for some time had been flying round, suddenly turned and commenced to glide straight towards where we sat. It was a great thrill to have this huge bird almost alight before us, but at the very moment when it was about to close its wings, it observed the strange beings and wheeled round to alight in its favourite creek.

A party of small waders came flying along and we noticed how tiny were some compared with the Ringed Plovers. They alighted and spread out before us upon the shore. Dunlin, Ringed Plover, and Sanderling they were for the most part. Running among them were the tiny waders, absolutely

tame as they came within the limit of the range offered by the field glass.

Their backs were a warm brown with dark centres to the feathers. Two wavy streaks of buff extending from the neck to the rump, were excellent points for identification. The bill was very short and the birds were of a much warmer tone generally than the darker legged and whiter clothed Sanderling. At the time we were not convinced, but as a wounded bird found at a later date proved, here was a party of Little Stints. Indeed the conjurer's hat was not yet exhausted. We counted with a fair degree of accuracy, the species on the reservoir on this memorable 13th September, the more important ones of which are given as follows: 50 Lapwings, 20 Dunlins, 20 Ringed Plover, 10 Curlew Sandpipers, 10 Teal, 4 Turnstones, 4 Sanderling, 4 Little Stints, 1 Shelduck, 1 Shoveler Duck.

Naturally after the excitement of this Sunday we were eager to take the first opportunity of revisiting the reservoir, which occurred on the following Tuesday, the 15th. It is interesting to compare the list above with that of the latter date. Lapwings (numerous but not counted), 3 Dunlin, 8 Ringed Plover, 5 Curlew Sandpipers, 0 Teal, 1 Turnstone, 1 Sanderling, 3 Little Stints, 1 Shelduck, 0 Shoveller.

This shows that while many of the birds had stayed, they were fewer in number, the Shelduck being the only Duck remaining.

On this evening we saw a small bird on the embankment with a badly drooping wing. It was one of the Little Stints. When caught and examined it was found to be in a bad position but the bird itself seemed in good condition. It could at least maintain itself and so after noting its points for future use we let it go. The two irregular buff lines on the back were quite noticeable and the outer tail feathers were of a smoky grey, whereas they are white in the Temminck's Stint. Observed on the ground at reasonable distance, one should look for the buff lines on the back. Temminck's certainly has not got these.

Saturday, 19th September, brought rain, but it was only slight. The crowds of the previous week had left save the poor Little Stint, who still ran about, lively enough, round the same favourite rocks. With him was a sound bird, the tamest imaginable. We walked right up to him and having obtained a comfortable position on the rocks, we erected the micro-telescope. This useful instrument will focus on anything from infinity to an object a few inches away and when we directed it on this occasion the Little Stint filled the whole of the object glass! More than this we longed for a camera and sunshine—two things we were without.

On the far shore stood a Knot, alone. We stalked to within thirty feet before he seemed to notice our presence. Again there was a large party of Lapwings, also five Ringed Plover and two Dunlins. The journey to the reservoir this day was most remarkable for the number of drowned mammals found in a catchwater by Mr. Murgatroyd. In five minutes walking he brought from the shallow water Weasel, Long-tailed Field Mouse, Short-tailed Field Vole, Common and Lesser Shrews, there being several of most species.

The following day the Knot remained, so did the Dunlin and Ringed Plover. The sound Little Stint, evidently reluctant to leave its wounded companion, had at last gone. We saw only the injured bird. Many Gulls of three species were present and the latest arrival was one Tufted Duck.

On 27th September for the first time there were no Ringed Plovers. The Stint still fed and seemed well. Waders were all gone, Duck taking their place. The presence of Mallard, Teal, and two Tufted Ducks seemed to indicate the end of the season, although a calm day on 3rd October produced thirteen Dunlin and five Tufted Ducks. The Dunlin were in full winter dress and looked very grey. There was no sign of the Stint, though we made careful search. For a time we said goodbye to White Holme and all that it had produced. The high land of the Yorkshire moorland reservoirs is too often shrouded in mists from October onwards to make frequent visits worth while, and for a time we are forced to turn our attention in other directions, but one may be sure we look forward to the coming autumn with as much anticipation as for the message announcing the first Wheatear.

EAST RIDING ADVENTIVE FLORA

Mr. A. K. Wilson, of 19 Wolfreton Villas, Springhead, near Hull, is compiling an adventive flora of the East Riding. He would be very grateful for any unpublished records of alien plants in this area, particularly for the Selby district and parts of the Riding remote from Hull. Due acknowledgment will, of course, be made for such records.

FIELD NOTE

Saurian Vertebræ.—Some saurian vertebræ from the Kellaways Sands at South Cave have recently reached us, and I understand from Dr. W. E. Swinton, of the British Museum, that they are dorsal bones of a Plesiosaur, *Cimoliosaurus* sp., probably *C. plicatus*.—T. SHEPPARD, Hull Museums.

THE BEETLES OF WHITBY AND DISTRICT

H. BRITTEN

MANY additions have been made to the Local List of Coleoptera during 1936, many of which are of interest to Yorkshire Coleopterists. The following list of those species considered 'Rare or Local' in Yorkshire, providing additional information regarding their distribution in the County. Eight species have been added to the County List, these being indicated by a dagger, while ten species were added to North-east Yorkshire, V.C. 62, indicated by an asterisk.

The season generally was fairly satisfactory for collecting, advantage being taken of the varied types of collecting ground in the district. Many interesting beetles were obtained from haystack refuse; Sphagnum Moss, hencote refuse, moles' nests and ants' nest residue brought home when outside collecting was impossible. Several interesting beetles were found in a nest of *Vespa vulgaris* L., while beehive refuse produced good results. Watching fallen timber on bright sunny days resulted in the capture of some rare species.

My thanks are again due to my father, H. Britten, F.R.E.S., The Museum, Victoria University, Manchester, for the determining of the material sent to him, and for his advice whereby several rare beetles were captured. To W. J. Fordham, M.R.C.S., The Garth, Barmby Moor, York, for kindly providing me with the status of each species in Yorkshire. To W. M. Crawford, B.A., 'Orissa,' Marlborough Park, Belfast, for kindly forwarding me a list of his captures during a short holiday spent in Whitby. To those friends who submitted specimens, their names following the record. All records without initials are the writers. I would welcome lists of Coleoptera or any other branch of Entomology with data from collectors who have visited the district at any time; this information would ensure the Local Records being kept up to date. The district under survey being that within a radius of 12 miles round Whitby. Any information supplied would be gratefully acknowledged.

- Carabus nitens* L. (Uncommon.) Howdale, 2/4/36 (Miss Ingham).
Badister sodalis Df. (Uncommon.) Mulgrave Woods, 11/4/36, 15/4/36.
Bradycellus sharpi Jy. (Local.) Littlebeck, 19/4/36. In hedgese refuse.
Amara ovata F. (Rare.) Whitby, 29/4/36.
Agonum mulleri Hb. (Local.) Littlebeck, 19/4/36; Goathland, 26/4/36.
A. gracilis Gy. (Local and rare.) Ugthorpe Moor, 24/7/36. In wet sphagnum.
Bembidion mannerheimi Sg. (Local.) Raithwaite, 15/1/36; Beckhole, 2/5/36.
Dromius nigriventris Th. (Local.) Sandsend, 26/4/36.

- Haliphys confinis* S. (Rare.) Whitby, 22/7/36 (W. M. Crawford).
H. fulvus F. (Local.) Mickleby Beck, 24/7/36; Wamplay Farm, 20/7/36 (W. M. Crawford).
H. fluviatilis Ab. (Rare.) Beckhole, 13/4/36. Under stone in a damp place. Wamplay Farm, 20/7/36 (W. M. Crawford).
H. lineatocollis Mm. (Local.) Mickleby Beck, 24/7/36; Roxby Beck, 24/7/36; Wamplay Farm, 20/7/36 (W. M. Crawford).
Deronectes elegans Pz. (Local.) Mickleby Beck, 24/7/36; Roxby Beck, 24/7/36 (W. M. Crawford).
D. borealis Gy. (Local.) Mickleby Beck, 24/7/36; Roxby Beck, 24/7/36 (W. M. Crawford); Mickleby Beck, 24/7/36 (W. M. Crawford).
D. sanmarki Sg. (Local.) Beckhole, 2/5/36; Mickleby Beck, 24/7/36.
D. sanmarki a. rivalis Gy. (Local.) Roxby Beck, 25/7/36; Mickleby Beck, 24/7/36 (W. M. Crawford).
Agabus unguiculatus Th. (Local.) Mickleby Lane End, 24/7/36 in wet sphagnum.
Rhantus suterellus Hr. (Local and rare.) Wamplay Farm, 20/7/36 (W. M. Crawford).
Anacaena limbata F. (Local.) Mickleby Lane End, 24/7/36.
Ochthebius exsculptus Gm. (Local.) Beckhole, 2/5/36.
Cercyon lugubris Ol. (Rare.) Littlebeck, 19/4/36. In hedgeside refuse.
C. terminatus Mm. (Local.) Skelder, 20/3/36. in wet sphagnum.
Aleochara diversa Sq. (Rare.) Whitby, 16-3-36. In hencote refuse.
†*Cratarea suturalis* Mm. (Rare.) Beckhole, 9/5/36. In haystack refuse.
Oxypoda opaca Gr. (Local.) Raithwaite, 15/1/36; Whitby, 26/1/36.
O. formiceticola Mk. (Rare.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nest.
O. haemorrhoea Mm. (Rare.) Whitby, 19/10/36; Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nest.
O. annularis Mm. (Rare.) Skelder, 20/3/36. In wet sphagnum.
Thiasophila angulata Er. (Very local and rare.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nest.
**Phloeopora angustiformis* Ba. (Rare.) Raithwaite, 21/3/36.
Dinarda markeli Kw. (Local and rare.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.
Notothecta flavipes Gr. (Very local.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.
N. anceps Er. (Very local.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.
Atheta occulta Er. (Rare.) Whitby, 16/3/36. In hencote refuse.
A. fungivora Th. (Rare.) Raithwaite, 15/1/36. In haystack refuse.
**A. inquinula* Gr. (Rare.) Skelder, 20/3/36. In wet sphagnum.
A. mortuorum Th. (Local.) Skelder, 20/3/36. In wet sphagnum.
A. nigricornis Th. (Rare.) Raithwaite, 15/1/36. In haystack refuse; Whitby, 16/3/36. In hencote refuse.
A. sodalis Er. (Rare.) Sandsend, 26/4/36.
†*A. reperta* Sh. (Rare.) Sleights, 17/5/36.
A. hybrida Sh. (Rare.) East Row, 19/3/36 (N. Britten).
†*A. hypnorum* Kw. (Rare.) Sleights, 17/5/36.
A. marcida Er. (Rare.) Mulgrave Woods, 21/10/36. In *Polyporus squamosus*.
**A. sordidula* Er. (Rare.) Whitby, 22/3/36.
A. aterrima Gr. (Rare.) Skelder, 20/3/36. In wet sphagnum; Whitby, 22/3/36.
A. dubia Sh. (Rare.) Whitby, 22/3/36; Mulgrave Woods, 15/4/36; Littlebeck, 19/4/36; Beckhole, 9/5/36.
A. clientula Er. (Rare.) Whitby, 29/1/36.
A. talpa H. (Local and rare.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.

- Leptusa angueta* Aub. (Rare.) Mulgrave Woods, 11/4/36.
L. ruficollis Er. (Local.) Skelder, 20/3/36; Mulgrave Woods, 11/4/36; Goathland, 13/4/36; Beckhole, 2/5/36.
Bolitochara obliqua Er. (Local.) Mulgrave Woods, 23/3/36.
Oligata inflata Mm. (Local.) Raithwaite, 15/1/36; Beckhole, 2/5/36, 9/5/36; Grosmont, 12/2/36 (A. E. Barrett). In beehive refuse.
Gymnusa brevicollis Pk. (Very local.) Ugthorpe Moor, 24/7/36 (H.B. and W.M.C.).
G. variegata Kw. (Very local.) Ugthorpe Moor, 24/7/36.
Tachyporus nitidulus F. (Local.) Raithwaite, 15/1/36. In haystack refuse.
Bryocharis analis Pk. (Uncommon.) Sandsend, 26/4/36.
Mycetoporus splendidus Gr. (Rare.) Skelder, 20/3/36. In wet sphagnum.
Heterothops binotata Gr. (Rare.) Beckhole, 9/5/36. In haystack refuse.
H. dissimilis Gr. (Rare.) Skelder, 20/3/36. In wet sphagnum.
Quedius maurus Sg. (Local.) Mulgrave Woods, 15/4/36.
Q. brevis Er. (Rare.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.
Q. picipes Mm. (Local.) Mulgrave Woods, 11/4/36.
Philonthus rotundicollis Mc. (Very local.) Beckhole, 2/5/36.
P. sanguinolentus Gr. (Local.) Skelder, 20/3/36. In wet sphagnum.
P. rectangulus Sh. (Rare.) Whitby, 19/10/36. In manure.
P. nigritulus Gr. (Very local.) Mulgrave Woods, 15/4/36; Whitby, 19/10/36.
Xantholinus atratus H. (Local.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.
Leptacinus parumpunctatus Gy. (Local.) Whitby, 2/4/36, 19/10/36.
L. cathychrus Gy. (Local.) Whitby, 2/4/36.
L. formicetorum Mk. (Local and rare.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.
Othius myrmecophilus Kw. (Local.) Skelder, 20/3/36. In wet sphagnum.
**Lathrobium ripicola* Cw. (Rare.) Whitby, 22/3/36.
L. terminatum Gr. (Local.) Ugthorpe Moor, 24/7/36. In wet sphagnum.
L. multipunctatum Gr. (Local.) Sandsend, 26/4/36.
Platystethus arenarius Sc. (Local.) Whitby, 16/2/36.
Oxytelus complanatus Er. (Local.) Whitby, 11/3/36.
Coprophilus striatulus F. (Local.) Beckhole, 2/5/36.
Lathrimaeum atrocephalum Gy. (Uncommon.) Mulgrave Woods, 15/4/36.
Omalius riparium Th. (Very local.) Raithwaite, 15/1/36. In haystack refuse.
Phloeonomus pusillus Gr. (Local.) Raithwaite, 21/3/36; Mulgrave Woods, 11/4/36.
Xylodromus concinnus Mm. (Local.) Whitby, 11/3/36; Beckhole, 9/5/36; Grosmont, 12/2/36 (A. E. Barrett). In beehive refuse.
Proctinus ovalis S. (Very local.) Skelder, 20/3/36. In wet sphagnum; Raithwaite, 15/1/36. In haystack refuse.
Megarthus affinis Mi. (Local.) Skelder, 20/3/36. In wet sphagnum; Whitby, 2/4/36.
Phlocobium clypeatum Ml. (Local and rare.) Whitby, 26/1/36; Sleights, 17/5/36.
Phloeocharis subtilissima Mn. (Local.) Beckhole, 2/5/36.
Calyptomeres dubius Mm. (Very rare.) Beckhole, 9/5/36. In haystack refuse.
†*Clambus punctatum* Bc. (Rare.) Skelder, 20/3/36. In wet sphagnum.
Agathidium rotundatum Gy. (Very rare.) Sleights, 17/5/36.

- Phosphuga atrata* L. *ab. brunnea* Hb. (Local.) Sandsend, 26/4/36 ; Whitby, 16/4/36 ; Mulgrave Woods, 21/10/36.
- Nargus wilkini* Spn. (Local.) Sleights, 17/5/36.
- N. anisotomoides* Spn. (Local.) Whitby, 26/1/36.
- Catops fuliginosus* Er. (Very rare.) Raithwaite, 15/1/36 ; Mulgrave Woods, 11/4/36.
- C. moris* F. (Very local.) Mulgrave Woods, 15/4/36.
- C. kirbyi* Spn. (Local.) Raithwaite, 15/1/36 ; Mulgrave Woods, 15/4/36.
- C. longulus*, Kl. (Rare.) Mulgrave Woods, 21/10/36.
- C. tristis* Pz. (Local.) Mulgrave Woods, 21/10/36.
- Sciodrepa watsoni* Spn. (Local.) Raithwaite, 15/1/36.
- Neuraphes sparshalli* Dy. (Very rare.) Beckhole, 9/5/36. In haystack refuse.
- Stenichus collaris* Ml. (Uncommon.) Skelder, 20/3/36 ; Mulgrave Woods, 11/4/36.
- Scydmaenus tarsatus* Ml. (Local.) Beckhole, 9/5/36. In haystack refuse.
- Bythinus burrelli* Dy. (Local.) Mulgrave Woods, 11/4/36.
- B. puncticollis* Dy. (Local.) Sleights, 17/5/36.
- Euplectus sanguineus* Dy. (Very local.) Skelder, 20/3/36. In wet sphagnum.
- Trichopteryx fascicularis* Hb. (Local.) Beckhole, 9/5/36. In haystack refuse.
- T. montandoni* At. (Very rare.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.
- Ptilium myrmecophilum* At. (Local.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.
- Scymnus auritus* Tb. (Very local.) Sleights, 17/5/36.
- Chilocorus bipustulatus* L. (Local.) Falling Foss, 12/4/36. (F. Readman).
- Mycetaea hirta* Mm. (Local.) Beckhole, 2/5/36, 9/5/36.
- Myrmetes piceus* Pk. (Very local.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.
- Micropeplus poccatu* F. (Local.) Whitby, 2/4/36.
- M. staphylinoides* Mh. (Uncommon.) Whitby, 23/3/36.
- M. fulvus* Er. (Local.) Whitby, 2/4/36 ; Beckhole, 9/5/36.
- Epuraea melina* St. (Local.) Beckhole, 2/5/36.
- **E. thoracica* Tr. (Very rare.) Mulgrave Woods, 24/6/36.
- E. pusilla* Il. (Local.) Falling Foss, 25/5/36.
- †*Meligethes planiusculus* H. (Rare.) Mulgrave Woods, 21/10/36.
- Glischrochilus 4-punctatus* L. (Rare.) Mulgrave Woods, 21/10/36.
- Rhizophagus parallellocollis* Gy. (Local.) Whitby, 4/12/35. In nest of *Vespa vulgaris*.
- R. perforatus* Er. (Rare.) Whitby, 4/12/35. In nest of *Vespa vulgaris*.
- R. ferrugineus* Pk. (Rare.) Sleights, 28/7/35.
- Monotoma conicicollis* Ab. (Very local.) Hellwath Beck, 24/10/36 (H.B. and H.B., snr.). In ants' nests.
- M. longicollis* Gy. (Very local.) Whitby, 19/10/36.
- Cartodere ruficollis* Mm. (Local.) Beckhole, 9/5/36. In haystack refuse.
- Corticaria impressa* Ol. (Local.) Raithwaite, 15/1/36 ; Sandsend, 26/4/36.
- Corticarina similata* Gy. (Rare.) Sleights, 17/5/36.
- Cryptophagus setulosus* St. (Local.) Sleights, 17/5/36.
- **C. umbratus* Er. (Rare.) Whitby, 16/2/36 ; Mulgrave Woods, 11/4/36 ; Beckhole, 9/5/36.
- C. badius* St. (Very rare.) Littlebeck, 19/4/36. In hedgeside rubbish.
- C. distinguendus* St. (Very local.) Whitby, 11/3/36. In hencote refuse.

- Cryptophagus affinis* St. (Local.) Raithwaite, 15/1/36; Whitby, 22/3/36; Beckhole, 9/5/36.
- C. pubescens* St. (Rare.) Grosmont, 12/2/36 (A. E. Barrett). In beehive refuse.
- C. scutellatus* Nw. (Rare.) Whitby, 11/3/36. In hencote refuse.
- †*Atoinaria atra* Hb. (Rare.) Skelder, 20/3/36. In wet sphagnum.
- A. bicolor* Er. (Local.) Mulgrave Woods, 11/4/36.
- A. ruficornis* Mm. (Very local.) Whitby, 22/3/36; Beckhole, 9/5/36.
- Ephistemus globulus* Pk. (Local.) Raithwaite, 15/1/36; Beckhole, 9/5/36.
- Scaphidium 4-maculatum* Ol. (Local.) Sleights, 17/5/36.
- Scaphosoma agaricinum* L. (Local.) Sleights, 17/5/36.
- Byrrhus fasciatus* St. (Local.) Goathland, 26/4/36.
- †*Dryops anglicanus* Edw. (Rare.) Mickleby Lane End, 24/7/36.
- Elater balteatus* L. (Local.) Maybeck, 25/5/36.
- Agriotes acuminatus* S. (Local.) Mulgrave Woods, 24/6/36.
- Corymbites pectinicornis* L. (Local.) Goathland, 15/6/36 (Miss Whipp).
- C. cupreus* F. var. *aeruginosus* F. (Local.) Whitby, 18/6/36 (F. Readman).
- Dasyllus cervinus* L. (Local.) Mulgrave Woods, 21/6/36.
- Cyphon paykulli* Gn. (Local.) Beckhole, 2/5/36.
- Dryophilus pusillus* Gy. (Very local.) Mulgrave Woods, 24/6/36.
- Grynobius excavatum* Kl. (Local.) Maybecks, 25/5/36. In holly trunk.
- Ptilinus pectinicornis* L. (Very local.) Mulgrave Woods, 4/7/36. In fallen beech branches.
- Lyctus linearis* Gy. (Local.) Whitby, 11/5/36, 21/6/36.
- **L. brunneus* S. (Rare.) Whitby, 9/5/36 (H. P. Kendall), 11/5/36. In ships' models in Whitby Museum.
- **Cis alni* Gy. (Very rare.) Mulgrave Woods, 15/4/36.
- **C. festivus* Gy. (Very local.) Whitby, 26/1/36.
- **Ennearthron cornutum* Gy. (Rare.) Mulgrave Woods, 26/4/36.
- Tetropium gabrieli* Wei. (Rare.) Sleights, 17/5/36.
- Alosterna tabacicolor* D.G. (Local.) Beckhole, 5/7/36.
- Leiodus nebulosus* L. (Local.) Beckhole, 2/5/36, emerged 6/6/36; Mulgrave Woods, 24/6/36.
- Pogonochaerus hispidus* L. (Very local.) Mulgrave Woods, 4/7/36.
- Donacia versicolore* Bm. (Local.) Randymere, 18/8/34.
- Lema puncticollis* Ct. (Rare.) Howdale, 25/4/36 (F. Readman); Mulgrave, 24/6/36.
- Clytra 4-punctata* L. (Very Local.) Hellwath Beck (pupae), 24/10/36 (H.B. and H.B., snr.). In ants' nests.
- Cryptocepholus labiatus* L. (Uncommon.) Mulgrave Woods, 21/6/36, 4/7/36.
- Halitica britteni* Sh. (Local.) Maybecks, 25/5/36.
- Phyllotreta tetrastigma* Cm. (Very local.) Beckhole, 2/5/36.
- Batophila rubi* Pk. (Local.) Beckhole, 2/5/36; Sleights, 17/5/36; Mulgrave Woods, 24/6/36.
- Chalcoides fulvicornis* F. (Very local.) Sleights, 17/5/36.
- Psylloides cuprea* Kh. (Local.) Mulgrave Woods, 24/6/36.
- Salpingus castaneus* Pz. (Local.) Mulgrave Woods, 24/6/36.
- Meloe violaceus* Mm. (Very local.) Maybecks, 25/5/36.
- Anthrribus variegatus* Gf. (Rare.) Mulgrave Woods, 24/6/36.
- Brachysomus echinatus* Bf. (Local.) Mulgrave Woods, 11/4/36.
- Polydrosus mollis* Stn. (Local.) Maybecks, 25/5/36.
- P. tereticollis* D.G. (Local.) Beckhole, 2/5/36.
- Barynotus moerens* L. (Local.) Red Gates, 25/5/36.
- Phytonomus variabilis* Hb. (Local.) Beckhole, 2/5/36.
- Grypoidius equiseti* L. (Local.) Deep Grove, 20/6/36; Mulgrave Woods, 21/6/36.

- Dorytomus taeniatulus* F. (Local.) Sleights, 17/5/36.
Elleschus bipunctatus L. (Local.) Wragby Wood, 6/6/36.
Cionus alauda Hb. (Local.) Mulgrave Woods, 4/7/36, 3/8/36.
C. pulchellus Hb. (Local.) Beckhole, 23/8/36.
Orobites cyaneus L. (Local.) Mulgrave Woods, 4/7/36.
Coeliodes rubicundus Hb. (Very local.) Sleights, 17/5/36.
C. dryados Gl. (Local.) Sleights, 17/5/36; Mulgrave Woods, 24/6/36.
† *Eccoptogaster intricatus* Rz. (Rare.) Whitby, 17/11/35, 8/12/35,
9/2/36, 5/7/36; Beckhole, 2/5/36; Sleights, 17/5/36.
Hylastes ater Pk. (Local.) Mulgrave Woods, 24/6/36.
Hylesinus crenatus F. (Local.) Mulgrave Woods, 15/4/36.
Myclophilus piniperda L. (Local.) Mulgrave Woods, 24/6/36;
Skelder, 27/6/36.
Dryocoetes autographus Rz. (Extremely local.) Mulgrave Woods,
24/6/36.
Pityogenes chalcographus L. (Very local.) Whitby, 12/2/36, 18/2/36,
12/3/36; Mulgrave Woods, 22/3/36.
P. bidentatus Hb. (Very local.) Whitby, 14/3/36.
Xyloterus domesticus L. (Local.) Raithwaite, 21/3/36; Falling Foss,
25/5/36; Mulgrave Woods, 24/6/36.

RECORDS

AN AMERICAN GREEN-WINGED TEAL IN WESTMORLAND

As there are only three records of the American Green-Winged Teal (*Anas crecca carolinensis*) for Great Britain, it may be of interest to record that the fourth was shot near Levens, South Westmorland, on December 26th, 1936. It was an adult drake with the characteristic broad white crescents on the sides of the breast in front of the shoulders, well developed. It was only wing-tipped and is still alive (March, 1937) on a private pond in Kendal. When I saw it a few days ago it was as wild and shy as when captured three months ago, and was very evidently not an escaped bird. The three previous records are Hurstbourne Park, Hants., about 1840; near Scarborough, Yorks., November, 1851; and Kingsbridge estuary, Devon, November 23rd, 1879. This species replaces the European Teal (*Anas crecca crecca*) in North America, winters in parts of the United States, and as far south as Lower California, West Indies, and Honduras, but is accidental in Hawaii, Bermuda, Greenland, and Japan (one record).—H. W. ROBINSON, M.B.O.U., A.M.A.O.U., F.S.Z.S., Lancaster.

NATURAL HISTORY RECORDS AND VICE-COUNTY NUMBERS

It would be a great boon to census-compilers in all branches of Natural History if recorders would affix the Vice-County number after every name in their lists. The absence of such numbers often entails long search in atlases and gazeteers, and then sometimes without success; certain village and river names, for instance, are frequently duplicated in gazeteers. The V.C. number puts the matter beyond question.

TETRAPHIS PELLUCIDA Hedw. AND *CLIMACIUM DENDROIDES* W. and M. IN FRUIT AT MALHAM TARN

T. H. B. BEDFORD

Tetraphis pellucida is a common moss which flourishes over extensive areas in Yorkshire and in the neighbouring counties. It is, however, very seldom seen fruiting. A new station where it has been observed in fruit would appear worthy of note. This winter, *T. pellucida* was seen fruiting on the Moss at Malham Tarn. Although *T. pellucida* may be found in scattered patches over most of the Moss, the fruiting plant appeared to be restricted to that portion which lies north of the inflow stream at the north-west of the Tarn. It was fruiting mainly on the north side of hummocks of peat. In a number of situations, however, it was observed to be fruiting on old dead tree stumps. *Orthodontium gracile* Schwaeg. var. *heterocarpum* Wats. was found in scattered patches in the same area. It was growing both on dead tree stumps and on the sides of hummocks of peat. This would appear to be a new record for Malham Tarn. Mr. Burrell states, in a personal communication, that Scaleber Force is the nearest known station for this moss where it is reported on birch.

Climacium dendroides is also a common moss, but it is a very rare fruiter. Rare specimens tend to accumulate in herbariums. Spruce's collection in the herbarium at the Manchester University contains specimens from six different Yorkshire stations. It is significant, however, that not more than two of the stations appear to have been discovered by Spruce himself. *Climacium* was first observed in fruit early in February of this year, at the north-west of the Tarn. The plant was fruiting in scattered patches in a restricted area on either side of the inflow stream. The locality is close to the point of entry of the inflow stream into the Tarn and is not more than fifty yards from the fruiting *Tetraphis*. Early in April, *Climacium* was found fruiting freely in another situation in the region north of the inflow stream. Here the moss was growing in wet meadowland. Whole tussocks were seen covered with the fruiting moss. The moss in the fruiting state is very beautiful and the fruit was in perfect condition when it was first discovered. The setas and the capsules are deep red in colour and as many as forty-three setas were observed on a single plant. The exerted columella is clearly visible after the fall of the lid of the capsule. Duplicate specimens in the various collections in the herbarium at the Manchester University would seem to suggest that *Climacium* may, perhaps, continue to fruit for a number of years in a

particular locality. Spruce's collection, for example, contains a specimen gathered at Stansfield by Dr. Wood in 1838. Dr. Wood's collection, however, contains a specimen from the same locality which is dated 1845 and was collected by Nowell. It will be interesting to observe whether the *Climacium* at Malham continues to fruit in future years.

The presence of two mosses which are well known to be rarely fertile, in fruit in the same area, tempts one to speculate as to the possible factors involved.

I am grateful to Mr. Burrell for confirming the identifications and for much kind help, and to Miss Wigglesworth for access to the collections of mosses in the herbarium at the Manchester University. Fruiting specimens from Malham Tarn have been placed in the herbarium at the Leeds University.

FIELD NOTES

Some early insects near Sheffield (1937).—The erratic weather we experienced between January and May must have had its effect on the dates of appearance of some of our earlier insects, and the following notes may be of interest. My earliest Stone-fly was again *Capnia nigra*, a male being found by Limb Brook (Ecclesall Woods) on January 25th. *C. vidua* was not noted till April 3rd, when a female was seen by Burbage Brook, where on April 6th, both sexes were about in some number, and *Leuctra hippopus* and *Protonemura meyeri* were fairly plentiful. On the same day *Nemoura marginata* was first observed in Bretton Clough. *Glossosoma vernale*, the first Caddis-fly noted, was flying by the River Derwent at Hathersage on the same date. Among the Hemiptera, *Elasmotethus interstinctus* was disturbed in hibernation among dead leaves in Ecclesall Woods on February 13th, *Dicyphus stachydis* on February 27th, and *Aphalara calthæ* on March 20th. A male Brimstone butterfly (*Gonepteryx rhamni*) was flying in the sunshine in Ecclesall Woods on April 9th. This species is not plentiful here nowadays, although several bushes of *Rhamnus Frangula* occur in the wood. On the same day the boring beetle, *Trypodendron domesticum* was emerging in numbers from birch trunks, and a single specimen of *Librodor (Ips) quadriguttatus* was noted on a sycamore trunk. The Brown Lace-wing, *Hemerobius stigma*, was beaten from Scots Fir in Ecclesall Woods on April 15th, and again on Blacka Moor on April 18th. On Blacka Moor also, on this last date, the Green Tiger Beetle (*Cicindela campestris*) was flying and running in considerable numbers in

sunshine, and the Heather beetle (*Lochmæa suturalis*) was about in enormous numbers, on and under the ling.—JAMES M. BROWN.

The Semmerwater Trollius Europæus L. (Globe Flower).—On a visit to Lake Semmerwater in June, 1931, I noted whilst traversing the shore of the lake from Stalling-busk towards the Carlow Stone, frequent patches of a dwarf form of *Trollius europæus*, which in a distant view gave the impression of plants of the winter aconite, the height of such plants denizing the small service rivulets not exceeding 4 in. Again, on the visit of the Union to the lake in June, 1934, similar dwarfed specimens of the plants occurred in considerable numbers in the Willow-Alder swamp at the Marsett end of the lake. With a view to testing whether this dwarfed form was a permanent variety, or that the short simple growth of the plants was an adaptation to the excessive wetness in which they had to develop, I brought away two of the Marsett plants, which were $3\frac{1}{2}$ in. in height from root to flower, with two small leaves, and planted in the ordinary stiff loam of my garden. Foliage only of the plants appeared in 1935. In 1936 the growth of the plants showed a marked improvement. In early June each plant produced flower stems 18 in. long with five blossoms, the follicles produced by the latter averaging seven per bloom, but seed production was meagre. The petioles of the radical leaves were 8 in. long. It would seem that the sub-aquatic conditions, together with deficiency of a normal food supply are answerable for the dwarf nature of the plants in their lake habitat.—W. E. L. WATTAM.

Holme Valley (near Huddersfield) Plant Notes.—Whilst on a visit to the upper portion of the Holme Valley at the end of September, 1936, I noted that an attempt had been made to establish (I was told the experiment commenced in 1935) on the rocky surround of Brownhill Reservoir, *Saxifraga umbrosa* L. and the cultivated *Cerastium tomentosum*; the former was thriving well; the latter displayed but meagre growth. Other plants which have become established near by are *Primula vulgaris* Huds. and *Scolopendrium vulgare* Sm. A further interesting growth was the small patches of the lichen *Cetraria aculeata* Fr. on parts of the grassed clinker pathway. The Batley Corporation have made an extensive afforestation of the vacant lands within their water shedding in this part of the Holme Valley. At the end of December, 1935, 16,000 coniferous trees had been planted, these comprising the Common, Japanese and Silesian Larches, Scot's and Cluster Pines and Nitka Spruce. As a whole the trees

seemed acclimatised, especially the Nitka Spruce. The planting on the steep slopes of Ridings Reservoir showed some dead areas, due doubtless to the failure of the trees to obtain a rapid fixidity in the loose-textured basal strata. An area of interest, with excellent results, is a field opposite the old Yateholme farm wherein had been transplanted three hundred and fifty seedling trees of Sycamore, Beech, Birch, and Mountain Ash obtained from the cloughs in the immediate neighbourhood.—W.E.L.W.

Flowering Scapes of *Taraxacum Officinale* (Dandelion).—In June, 1936, observations were kept upon plants of Dandelion growing on the cindery waste of a tradesman's depot near to the centre of the town. The depot has a surround of post and rail hoarding 15 ft. in height, but the area received a good amount of any prevalent sunshine. It was the length of the scapes which attracted most attention. Of the 203 flowers produced by the plants 55 had scapes 20 in. in length: the remaining scapes were 12 to 16 in. in length. This lengthy growth seemed to have an effect upon the seed production, for the average pappus yield was only ten. It seemed as if this unusual scape growth was a means adapted by the plants to enable the pappus to be raised to a level to take advantage of higher wind currents to aid in the dispersal of the seeds.—W.E.L.W.

Huddersfield District Lepidoptera Notes, 1936.—Butterflies have been much scarcer in 1936. The first brood of the three common White species was sparse, and even the late summer brood was greatly reduced in numbers. The same remarks apply to *V. urticae*, *P. cardui*, *P. atalanta*, and *C. phlaeas*. Four specimens of *V. io* were seen at Newsome. The immigration of *Plusia gamma*, reported by Mr. T. Hyde-Parker in *The Naturalist* for 1936, p. 231, extended to South-West Yorks. In the latter part of August and throughout September exceedingly large numbers of this moth were noted in gardens. On the 2nd July, at 9-50 p.m., I counted in my garden 17 specimens of *Plusia iota* feeding on the nectar of the flowers of the Red Valerian. Larvæ of *A. rumicis* have been very abundant and conspicuous feeding on the foliage of sweet peas. Imagines of *S. populi* and *D. vinula* have also not been uncommon. Two specimens of *A. uanamis* have been taken in my house. Several specimens of *A. betularia* were noted on the boles of lime trees at Newsome. *O. dilutata* appeared in considerable numbers in the Netherton district. *M. staltatarum* has been noted at Marsden and Newsome.—W.E.L.W.

RECENT PROGRESS IN THE GEOLOGY OF YORKSHIRE

- (I) *Sum. Prog. Geol. Surv. for 1935*, Pt. II (*Mem. Geol. Surv.*), 1937. 3s., H.M.S.O.

Including among others :

'The Carboniferous Geology of the Skipton Anticline,' by R. G. S. Hudson and G. H. Mitchell, pp. 1-45, Pl. I, figs. 1-9.

'Washouts in the Haigh Moor Coal of West Yorkshire,' by Wilfrid Edwards, pp. 111-118, figs. 1 and 2.

- (II) *Proc. Yorks. Geol. Soc.*, Vol. XXIII, Pt. 3, 1937. 7s. 6d., Leeds. Including among others :

'A Pleistocene Strand Line in the Vale of York,' by Wilfrid Edwards, pp. 103-118, figs 1 and 2.

Reports of Field Meetings for 1936. Prince of Wales Colliery, Cooks Study and Holme, Hornsea, the Skipton Anticline, Barnsley, Furness and Southern Lake District, pp. 125-142, Pls. VI and VII.

'Analyses of Sandstones from the Millstone Grits of Yeadon,' by J. A. Butterfield, pp. 144-158, figs. 1-3.

'High Level Erosional Platforms in Cumberland and Furness,' by S. E. Hollingworth, pp. 159-177, Pls. VIII and IX, figs. 1 and 2.

The paper by Dr. R. G. S. Hudson and Dr. G. H. Mitchell includes a geological map of the Skipton Anticline from Skipton to Bolton Abbey and a section of the strata thus exposed. In the core of the anticline at Haw Bank Quarry limestone of Tournaisian age is well seen. These beds are older than any other Lower Carboniferous yet known in Yorkshire. The entire succession is grouped in four sedimentation periods, various fossil assemblages are discussed and the exact position of each fossil locality is given. Three periods of crustal movement are recognised, and it is shown that the folding of the Carboniferous Limestone as exposed in the well-known quarry at Draughton, is pre-Millstone Grit in age. The relation of the Skipton succession to the sedimentation basin of the Craven Lowlands and to the Ingleborough massif is established and its implications discussed.

The subject of washouts in the coal-seams of the Yorkshire coalfield is one which has long attracted the attention of Yorkshire geologists. Among others, Kendall emphasized the then prevalent theory of contemporaneous stream erosion, while Fearnside attributed many of the features shown by washouts to strain set up by unequal consolidation of sands and muds. In the above lucid and balanced paper, Edwards states that the washouts in the Haigh Moor Coal are an effect of stream-channelling and that many of the associated deformation features are the result of subaqueous slip.

In a valuable paper in the *Proc. Yorks. Geol. Soc.*, Mr. Edwards first describes various gravels occurring on both sides of the Vale of York south of the Escrick Moraine, and especially those found between Tadcaster and Doncaster. He considers them to be strand-line gravels, the result of a marine submergence of the Vale of York. He discusses their relation to the river-terraces of Airedale and Calderdale, tentatively correlating them with the Higher Terrace. In his discussion on the age and nature of the Vale of York submergence, Mr. Edwards suggests that it coincided in the main with the transition from interglacial to glacial conditions, and was followed, after an interval of dissection, by the York-Escrick (Hessle) glaciation.

In a further paper, Mr. Butterfield continues his examination of the heavy minerals of the sandstones of the Millstone Grit and records the occurrence of new minerals.

In a very suggestive paper by Dr. Hollingworth evidence is adduced in support of the view that several old, dissected platforms or shelves, cutting rocks of all ages, can be recognised terracing the surface in and

around the Lake District. They maintain constant altitudes around the district and are considered to be unwarped erosional features formed during periods of stationary sea-level.

Finally, the attention of the readers of *The Naturalist* is called to a series of reports of field meetings of the Yorkshire Geological Society published in their proceedings. These reports are in fact fairly detailed accounts of the geology of various areas in Yorkshire and the neighbouring counties. They usually detail a convenient route to be followed for the best examination of the geology and are occasionally illustrated. In the recently published *Proceedings* they include an account of the drifts of Hornsea by Mr. W. S. Bisat, while Drs. Hudson and Mitchell give a route to be followed to examine the geology between Skipton and Bolton Abbey. The most valuable contribution, however, is that included in an account of the geology of Furness and the Southern Lake District in which Mr. T. C. Nicholas describes the Coniston Limestone Series of Torver and Coniston, and Mr. Templeman gives an account of the Lower Carboniferous of Hodbarrow.

SOME NEW EAST YORKSHIRE DIPTERA

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

My friend Mr. H. Audcent, of Bristol, spent the early part of August last year (1936) at Barmby Moor and paid numerous visits to Allerthorpe Common, paying special attention to the Diptera. As a result he has added 16 species and 2 varieties to the county list (indicated by a dagger) and 25 species to the vice county 61, South-East Yorkshire (indicated by an asterisk), a complete list of which additions is given below, with a list of species taken at Millington.

BARMBY MOOR

**Pales cornicina* L. An uncommon species taken at Bedale.

**Dynastosome fuscicorne* Mg.

**Bicellaria spuria* Flin.

**Chrysotus gramineus* Flin.

†*Xanthandrus comtus* Harr. A rare species whose larva feeds on the larvæ of Tortrices. Occurs as far north as the Isle of May.

**Hydrotæa armipes* F.

**Azelia macquarti* Stæg.

ALLERTHORPE COMMON

†*Dictenidia bimaculata* L. Generally distributed in the south as far north as Notts. Larva in decaying wood. Not common.

†*Crypteria placida* Mg. A very rare species only recorded from Herefordshire and Sherwood Forest.

**Idioptera fasciata* L. Rare, only from Austwick and Delamere.

**I. pulchella* Mg.

**Phora aterrima* F.

†*Baccha obscuripennis* Mg. A widely distributed species, much confused with *elongata* F.

Sphaerophoria scripta L. var. †*nigricoxa* Ztt.

**Noeza (Hybos) grossipes* L.

**Chrysotus blepharoscetes* Kow.

†*Medeterus petrophilus* Kow. Not common, Cornwall to Sutherland.

**Piophilila vulgaris* Flin.

†*Chamæmyia (Ochthiphila) juncorum* Flin. Not common as far north as Notts.

**Scaptomyza graminum* Flin.

- **Scatella stagnalis* Fln.
- **Meromyza pratorum* Mg.
- **Actia crassicornis* Mg.
- †*Nemorilla floralis* Ztt. A common species taken as far north as Notts.
- Sarcophaga frenata* Pand. var. † *cruentata* Pand.
- †*S. dissimilis* Mg. Not uncommon as far north as Notts.
- **Coenosia geniculata* Fln.
- †*Fannia polychæta* Stein. Not uncommon.
- **Phaonia tinctipennis* Rnd.

MILLINGTON (1/8/36), Y.N.U. MEETING

- **Limonia trivittata* Schum.
- **Pseudolimmophila lucorum* Mg.
- **Molophilus appendiculatus* Stg.
- †*Chrysotimus molliculus* Fln. Occasionally abundant. Not previously taken so far north.
- †*Orellia tussilaginis* F. Attached to *Arctium majus*. Taken in Notts.
- †*Sciomyza (Melina) grisea* Fln. Uncommon but widely distributed.
- **Trypetoptera punctulata* Scop.
- †*Copromyza stercoraria* Mg. Common and widely distributed.
- **Phyllomyia volvulus* F.
- †*Rhynchista proluxa* Mg. A little known species not taken previously as far north.
- †*Winthemia quadripustulata* F. Widely distributed.
- †*Sarcophaga scoparia* Pand. Uncommon.
- **Fannia armata* Mg.
- **Hydrotæa similis* Meade.
- **Hera variabilis* Fln.

LANCASHIRE AND CHESHIRE FAUNA COMMITTEE

THE twenty-third Annual Meeting was held on March 6th, 1937, in the Liverpool Museum by kind invitation of the Authorities. There was a large attendance and Alderman Miller extended a very hearty welcome to the Committee. Dr. J. Wilfrid Jackson thanked the Alderman for his welcome and the Liverpool Authorities for their kindness and hospitality.

Dr. D. A. Allan, President, occupied the Chair. The Annual Report and Balance Sheet showed an increase in membership and improvement in financial position.

Professor H. Graham Cannon was elected President for the ensuing year, and Messrs. J. A. Jackson and W. H. Western, Vice-Presidents, while Messrs. J. Clegg, W. K. Ford, and A. Hazlewood were elected to the Executive Committee.

After completion of the formal business tea was served and the opportunity taken to renew old friendships and discuss matters of mutual interest. All present were delighted when an illuminated address was presented to Colonel C. Theodore Green on behalf of the Museum Authorities, both Alderman Miller and Alderman Cole speaking in the highest terms of his valuable services and generous gifts.

A large and varied exhibition of specimens and visits to the various galleries and to the aquarium, accompanied by guides, found everyone plenty to do and, as on previous occasions, the visit was one which will not easily be forgotten.—A. K. LAWSON.

NEWS FROM THE MAGAZINES

The *London Naturalist* for 1936 contains, as usual, a number of interesting articles. Among these may be mentioned: 'Notes on the Flora of a Bracken Area on Epsom Common and Surrey,' by R. W. Robbins; 'Bracken in Richmond Park,' by C. L. Collenette; 'British

Butterflies in 1936,' by H. J. Burkill; 'Predaceous Flies and their Prey,' by L. Parmenter; 'Notes on Dragonflies 1936,' by E. B. Pinniger; 'Plant Gall records for 1936,' by H. J. Burkill; 'The Dartford Warbler,' by H. Benthall; 'Some Field Notes on the Hobby,' by J. E. Roberts (with plate), and 'The Starling Roosts of N.E. Surrey,' by R. S. R. Fitter. A separate supplement of 34 pages is the 'London Bird Report for 1936,' compiled by R. C. Homes, containing much useful information, and special records of the Grey Wagtail, Lesser Redpoll and Little Owl.

The Entomologist for April contains 'The gall-making sawflies of the genus *Pontania* in Durham and Northumberland,' by J. W. H. Harrison (with plate); 'Bibliogrumbings,' by C. J. Gollidge; 'Indo-Australian Hesperiidæ: descriptions of new genera, species and subspecies,' by Brig. W. H. Evans; 'British lepidoptera collecting, 1936,' by C. G. M. de Worms; and several notes and observations.

The Entomologist's Record for April contains 'Supplementary notes on the structural characteristics of *Pyrgus sibirica* Reverdin, and *P. chapmani* Warren (Lep. Hesperiidæ),' by B. C. S. Warren (with plate); 'Collecting notes for late summer, 1936,' by H. B. D. Kettlewell; 'Notes on collecting at South Benfleet, Essex, 1930 to 1936,' by R. W. Attwood; 'Orthoptera in 1936,' by M. Burr; 'Notes on collecting, etc.'; 'Current notes and short notices'; and supplement 'The British Noctuæ and their varieties,' by H. J. Turner.

The Entomologist's Monthly Magazine for April contains 'A preliminary list of the Coleoptera of Windsor Forest,' by H. Donisthorpe; 'Investigations on beetles associated with carrion in Pannal Ash, near Harrogate,' by R. R. U. Kaufmann; 'Records of Irish Coleoptera,' by J. N. Halbert; 'The parasites of British birds and mammals, XII. On some parasites from the burrows of puffins,' by G. B. Thompson; 'Notes on some Brazilian Potamophilinæ and Elminæ (Coleoptera, Dryopidæ),' by H. E. Hinton, and several short notes.

The Entomologist's Monthly Magazine for May contains 'Notes on some Brazilian Potamophilinæ and Elminæ (Coleoptera, Dryopidæ),' by H. E. Hinton (with figure); 'Three new Membracidæ from Borneo,' by W. D. Funkouser (with plate); 'On the British species of *Sphecophaga* (Hym. Ichneumonidæ),' by J. F. Perkins; 'The parasites of British birds and mammals, XII. Records of Siphonaptera bred from bird's nests,' by G. B. Thompson; 'A preliminary list of the Coleoptera of Windsor Forest,' by H. Donisthorpe and one or two short notes.

The Entomologist for May contains 'The British species of the *nimbella* group of the genus *Homoeosoma* (Lep. Pyralidæ),' by F. N. Pierce (with plate); 'Description of three new species of the genus *Homoeosoma*,' by Count G. A. Bentinck and F. N. Pierce; '*Xylina socia* Rott. vars. *pallida* Tutt., and *umbrosa* Esp.,' by C. N. Hawkins; '*Opogona antistacta* Meyrick (Lep. Tineidæ) bred from banana-feeding larva,' by S. Wakely; 'Migration Records, 1936,' by Capt. T. Dannreuther; 'The bees of Barbados,' by T. D. A. Cockerell; and numerous short notes and observations.

The Transactions of the Society for British Entomology, Vol. 4 Part 1, is entirely taken up with a monograph on 'The British species of *Dacnusa* (Hym., fam. Braconidæ),' by G. E. J. Nixon. It is illustrated with 22 structural plates. The species of *Dacnusa* are mainly parasitic on small diptera of the genera *Phytomyza* and its allies. Species recorded for the north of England are: *postica* Haliday, Northenden, Cheshire; *lugubris* Nixon, Arnfield, Cheshire, and Ben Rhydding, Yorks.; *aphanta* Marshall, Rostherne, Cheshire, and Ben Rhydding and Middleton, Yorks.; *ovalis* Marshall, Ben Rhydding; *elegantula* Nixon, Carrington, Cheshire; *melanocera* Thomson, Arnfield; *talaris* Haliday, Middleton; *temula* Haliday, Askham Bryan, Yorks.; *maculipes* Thomson, Yorks.; *lævipectus* Thomson, Yorks.; *ampliator* Nees, Ben Rhydding; and *tristis* Nees, Pickmere, Cheshire.

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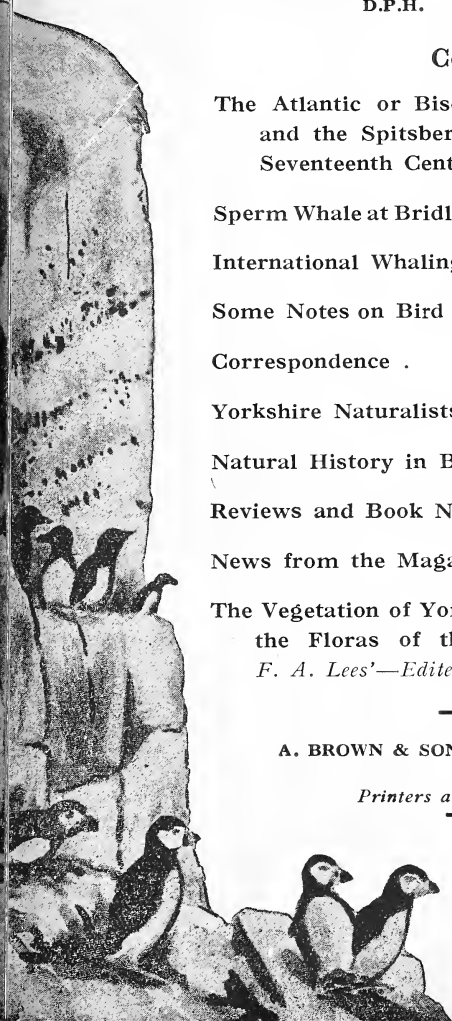
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THE ATLANTIC OR BISCAY WHALE, *BALAENA GLACIALIS* AND THE SPITSBERGEN WHALE FISHERY OF THE SEVENTEENTH CENTURY

R. W. GRAY

WHALES are intimately connected with the currents of the ocean. Van Beneden calls this whale a 'Gulf Stream whale' and this description of it is usually accepted as correct.

According to what Professor D'Arcy Thompson says, the Atlantic whale occurs in the vicinity of St. Kilda in May and June, but in seasons in which the oceanic circulation is active and much Gulf Stream water is flowing north it does not tarry in Scottish waters.¹

According to Hjort an Atlantic whale was caught north-east of Iceland in 1889 and another was seen near Bear Island in 1883.²

I now propose to discuss two questions arising in connection with this whale. Firstly, in the days when they were still numerous did this whale migrate as far north as Spitsbergen. For the following reasons I think it probably did especially in 'open seasons,' *i.e.* seasons in which there was more open water than usual and presumably a large influx of warm open water into the Greenland Sea.

(1) The Gulf Stream with which this whale is associated reaches Spitsbergen mitigating its climate and keeping its waters more or less free of ice. Let me mention a few facts.

- (a) A well-known work of reference referring to Spitsbergen says 'The summer climate is mild and not unlike that of the Shetlands.'³
- (b) As stated in my 'Peterhead Sealers and Whalers,' the sea immediately west of Spitsbergen is usually free from ice. Even in April it is often possible to sail in open water as far north as lat. 80° or 81° and even to round Hakluyt's Headland and reach situations north of Spitsbergen.⁴
- (c) In 1861 Torell found a bean of the *Entada gigalobium*—a West Indian plant—on the shore at Shoal Point (lat. 80° long. 12° W.) a discovery affording as

¹ Thompson, D'Arcy W. 'On Whales landed at Scottish Whaling Stations during the years 1908-1914 and 1920-1927.' Fishery Board for Scotland Scientific Investigations, 1928, No. III.

² Hjort, J. 'Fiskeri og Hvalfangst,' Bergen, 1902.

³ Chambers' Encyclopædia, *Spitsbergen*.

⁴ Gray, R. W. 'Peterhead Sealers and Whalers.' *Scottish Naturalist*, 1932-1933.

Nordenskiöld says 'the most convincing evidence that the Gulf Stream reaches this high latitude.'¹

- (d) In 1823 (a very open season) Hoel found the temperature of the sea west of Spitsbergen to be 7° C. and north of it about 5°.²

(2) Other open-water whales migrate as far north as Spitsbergen, especially in 'open seasons.' Let me give a few examples :

- (a) Scoresby, W., Jr., speaking of the Blue Finner whale, *Balænoptera sibbaldii*, says 'In June, July, and August, when the sea is usually open, it advances along the land to the northward as high as the 80th degree of latitude. In open seasons it is seen near the Headland (Hakluyt's) at an earlier period.'³
- (b) 1820 was an open season and in his logbook W. Scoresby, Sr., says (April 23rd, lat. 78' 52'), 'Found the fish we was chasing to be Finners.'⁴
- (c) 1874, as stated in my 'Peterhead Sealers and Whalers,' was a very open season and Finners (*B. sibbaldii*), Bottlenose whales and Killers were seen in the latitude of northern Spitsbergen in April and May.

(3) As stated in my 'Peterhead Sealers and Whalers,' 1817 was a very open season and many whales were seen outside the ice, some of which may have been Atlantic whales not Greenland whales. Referring to his season, Scoresby says : 'The general conduct of whales, after being struck, was in this season peculiar. Instead of immediately descending to the depth of near a mile (like Greenland whales) they frequently never went down at all, and those that did descend after receiving the harpoon, seldom proceeded more than 200 or 300 yards below the surface.' In his 1817 logbook, under date June 1st (lat. 77°), Scoresby, Sr., says : 'The fish we have seen this last weeks was all in the open water and not inclined to approach the ice when chased ; they ran first one way (and then another), and like a fox, returned to the same ground, which water was very dark and abounded in shrimps, animalcules, etc.' Concerning one of nine-foot bone killed the following day he makes the very unusual remark 'whalebone light and small at the ends.' A whale

¹ Nordenskiöld, A. E. *Arctic Voyages*, 1858-1879, p. 73.

² Hoel, A. The Norwegian Svalbard Expeditions, 1906-1929, p. 39.

³ Scoresby, W., Jun. *Arctic Regions*, Vol. I, p. 482.

⁴ Scoresby, W., Sen. *Logbooks of Whaling Voyages to the Greenland Sea*, 1791-1798, 1801, 1817, 1820 and 1822. Published in facsimile by the Explorers' Club, of New York, in 1916.

struck by the *Royal Bounty* of Leith on May 28th in lat. 77° took for a Greenland whale and unusual length of time to kill. At the end of thirty-six hours it was still able to tow the *Royal Bounty* with her sails aback and all her boats against a 'moderately brisk breeze' with a velocity of 'at least one and a half to two knots.' Neither ice nor land were in sight at the time.

My second question concerns the identity of the right whales killed, 'Greenland or Spitsbergen Fishery in the Seventeenth Century.' Were the whales Greenland whales, as is usually stated or were they Atlantic whales?

The fishery, as is well known, was prosecuted from the shore; and, as I explained in a letter on the subject which I published in *Nature* in 1930, it must have been confined to open seasons and the summer months.¹ I now find that Peyrere, a seventeenth-century writer, confirms this. In his *Relation du Gronland*, he says: 'The sailors who go to Spitsbergen for the whale fishery get there in July and leave again towards the middle of August. They would not be able to land, on account of the ice, if they arrived before the month of July; and they would not be able to leave, for the same reason, if they set off later than the middle of August.'²

For the following reasons I think the whales must have been Atlantic whales not Greenland whales.

(1) Greenland whales do not frequent the vicinity of Spitsbergen in the summer months, especially in open seasons. In these circumstances they are elsewhere. This much may be gathered from what I say in my 'Peterhead Sealers and Whalers' and my father who had a life-long experience is quoted by Lindeman as saying 'At any rate the "fish" (*i.e.* *Balaena mysticetus*) do not haunt the bays of Spitsbergen. . . . I have never seen them close to the land.'³

(2) The extermination in the seventeenth century of the right whales which frequented the vicinity of Spitsbergen (and Jan Mayen) was not followed by a cessation of whaling in the Greenland Sea. On the contrary, the industry continued and even flourished and did not come entirely to an end until a quite recent date. As stated in my 'Peterhead Sealers and Whalers,' in 1814 the British whaling fleet alone captured 1,437 whales and as recently as 1895 a single Dundee ship caught nine, but in a different part of the sea.

¹ Gray, R. W. *Spitsbergen Whale Fishery of Seventeenth Century*, *Nature*, August 30th, 1930.

² Peyrere, Isaac de la, 'Relation du Gronland,' Paris, 1647. English Translation in White's *Spitsbergen*, 1855, p. 236.

³ Lindeman, Moritz. 'Die Arktische Fischerei de Duetschen Seestadte, 1820-1868.' *Erganzungsheft*, No. 26, zu Petermann's *Mittheilungen*, 1869.

(3) Martens, who visited Spitsbergen in a Hamburg whaler in 1671, says: 'There is two fins behind the eyes of a bigness proportionable to the whale, covered with a thick black skin, delicately marbled with white strokes; or as you see in marble, trees, houses, or the like things represented.' This description seems to be more applicable to the pectoral fin of the Atlantic whale than the Greenland whale. In the latter the skin of the pectoral fin is uniformly black except perhaps for a certain amount of greyness in the region of the axilla in old animals.¹

(4) The facts connected with the right whale fishery of the Greenland Sea (and Davis Strait) are perplexing unless we postulate the participation of two species, viz., Greenland whales in deep water and among the ice and Atlantic whales in open water near the land. Parry, who visited Northern Spitsbergen in 1827, seemed to have realised this. In his account of his voyage he says: 'Lt. Forster (who explored Hinlopen Strait) saw some sea-horses (walruses), narwhals, and white whales but no black whales, nor did we in the whole voyage see any except on the ground frequented by our whalers west of Spitsbergen. It is remarkable, however, that the "crown bones" and other parts of the skeletons of (right) whales were found on most places where we landed on this (northern) coast.'²

(5) According to contemporary accounts of the fishery the seventeenth-century whaling ships were very small and more in accordance with the type of ships used in the capture of Atlantic whales than Greenland whales. Some of them only measured sixty tons and only carried three boats, the latter being an insufficient force with which to undertake the capture of Greenland whales even in the most favourable circumstances.³

The Entomologist's Monthly Magazine for June contains 'A preliminary list of the Coleoptera of Windsor Forest,' by H. Donisthorpe; 'A new Hawaiian carabid and notes on some Nitidulidæ,' by R. C. L. Perkins; 'A note on the systematic position of *Parallelomorpha depressa* Perroud (Coleoptera: Carabidæ),' by E. B. Britton; 'A new grasshopper (Orthoptera: Acrididæ) from the Middle Atlas mountains, Morocco,' by K. H. Chapman; 'Results of the Oxford University Expedition to Sarawak (Borneo), 1932. Bembecinae (Hymenoptera),' by Professor J. B. Parker; 'The parasites of British birds and mammals, XIV. Records of Mallophaga from birds, XV. Bird-fleas and their hosts,' by G. B. Thompson; and two shorter notes.

¹ Martens, F. 'Voyage to Spitsbergen in 1671.' See White's *Spitsbergen*, p. 105.

² Parry, W. E., *Narrative of an Attempt to reach the North Pole in Boats*, London, 1828.

³ Gray, Mr. 'An Account of the Whale Fishery.' M.S. in British Museum (quoted by Conway in his *No Man's Land*, p. 203.

SPERM WHALE AT BRIDLINGTON

W. J. CLARKE, F.Z.S.

ON the early morning tide of January 25th, 1937, a large whale was seen to have been stranded on the shore at Bridlington. It was alive and threshing the sand very vigorously when first discovered, but died quite suddenly about 10 a.m. After death a large pool of blood came from it.

It was a Sperm Whale, measuring 63 feet in total length, and with a maximum girth of 36 feet. Mr. Percy Stammwitz, of the British Museum, who came to Bridlington to secure the skeleton for the Museum, pronounced it to be a young male in splendid condition and well fed. The skeleton weighed five tons. The vertebral column was found to be fractured, probably by the frenzied struggles of the unfortunate animal after being stranded, and this, no doubt, accounted for the large quantity of blood which flowed from it after death. No ambergris was found in it, this being only produced by the older specimens. The body temperature of the whale was found to be 114 deg. F., and the carcase took nearly a month to cool.

The body was acquired by Mr. H. Coates, of Bridlington, who cut it up for the sake of the oil it contained. From the blubber about five tons of oil was extracted, while the flesh yielded about another two tons. From the head 450 gallons of spermaceti oil was taken, this including also the wax for which no separate figures were kept.

Sperm Whales are not of frequent occurrence in the North Sea and I am not acquainted with any other Yorkshire record of its appearance, other than the male example, 56 feet long, which was stranded in 1825 at Tunstall, in Holderness. Its skeleton, 47 feet 7 inches in length, is, or was until recently, preserved at Burton Constable. The habitat of the species consists of all the warmer oceans of the world, but does not include the Polar seas, and those individuals which stray into the North Sea are merely lost stragglers, or dead carcases, which have been brought there by the Gulf stream.

The food consists chiefly of cuttles and squids, but considerable quantities of fish are also eaten.

The largest toothed animal in the world, records seem to indicate that a hundred years or so ago, the whalers captured specimens of considerably greater dimensions than any taken at the present time. Examples of 80 feet in length have been reported by the old-time whalers, but now-a-days from 55 feet to 65 feet seems to be about the usual size for a full-grown individual.

Sperm Whales are now much scarcer than in former times, and their capture was often attended by considerable risk to

the vessels taking part in it. A number of instances have been reported where the wounded whale has charged the ship and sunk it, and in one instance a Sperm Whale, after attacking and demolishing one boat, made for a second, from which it was only diverted by its attention being attracted to a third. This avoided the charge, whereupon the whale headed straight for the parent ship but died before it reached her.

It has not been possible to send this note earlier as the boiling of the oil has only recently been completed, and figures were not available. I am greatly indebted to Mr. H. Coates, Mr. T. Hyde-Parker, and Mr. P. Stammwitz for information given to me on this subject.

INTERNATIONAL WHALING AGREEMENT

[Contributed by the Ministry of Agriculture and Fisheries]

THE Agreement was signed at the International Conference on the Whaling Industry early last month by the accredited representatives of the Governments of the Union of South Africa, United States of America, the Argentine Republic, the Commonwealth of Australia, Germany, the United Kingdom of Great Britain and Northern Ireland, the Irish Free State, New Zealand, and Norway.

The following Governments were also represented at the Conference by Observers, viz.: Canada and Portugal, and there is good reason to hope that they will shortly accede to the Agreement. It is hoped also to secure the adhesion of other Governments who did not take part in the conference, but have whaling interests to preserve.

The Agreement comes into force on the first of this month (July, 1937), but is subject to ratification. Subject to this, the Agreement will be in full force until June 30th, 1938, and provision is made for its continuance thereafter subject to the provision that any Government may withdraw from it on giving six months' notice to terminate on the following June 30th.

The Agreement follows, on the whole, familiar lines. There will be a close season for what is known as pelagic whaling; that is whaling prosecuted by whale-catching ships attached to floating factories, for nine months of the year, except in the first year of its operation, when the open season will be extended by one week at the end of the season.

North of 40 deg. South Latitude as far as the Equator pelagic whaling for baleen whales is absolutely prohibited, and this prohibition is extended to wide areas north of the

Equator. For instance, pelagic whaling by ships of the contracting Governments is prohibited North of the Equator in the whole of the Atlantic Ocean, Davis Strait, Baffin Bay, and the Greenland Sea, in the Indian Ocean and in the Pacific Ocean south of 35 deg. North Latitude, east of 150 deg. West Longitude, and south of 20 deg. North Latitude west of that Longitude.

Certain species of whales—the various Right Whales and the Grey Whale—are protected absolutely as are all whale calves and female whales attended by calves.

It is also forbidden to kill whales below certain size limits, the size limits being raised above those which have been prescribed by agreement between the United Kingdom and Norway in the past. Under the Agreement it will not be lawful to take blue whales of less than 70 feet in length, fin whales of less than 55 feet, humpback whales of less than 35 feet, and sperm whales of less than 35 feet. The extension of this form of protection to the sperm whale, which has not hitherto received any protection, is one of the novelties of the Agreement.

Whaling at land stations is to be subject to a six months' close season. The dates of the beginning and ending of the close season will vary according to the latitude of the station. The extended period of liberty to hunt whales from land stations is justified by the fact that their operations are limited by the fact that they can only take such whales as come into their vicinity, whereas the factory ships can follow the schools of whales wherever they may be.

The Agreement is accompanied by a final act in which the Conference discusses various matters not dealt with in the Agreement and recommends to the Governments that they should prepare to take in agreement with one another other measures for the further protection of whales in the light of further experience and knowledge. An important suggestion among others is that the Governments should take powers to regulate the methods of shooting whales with a view to preventing the loss of whales fatally wounded through the use of defective guns or harpoons, or other causes, and at the same time mitigating the cruelty which admittedly attends this process.

The Conference further points out that the measures they have agreed upon may prove nugatory if the ships of countries not parties to the Agreement are permitted to indulge in unregulated whaling, and urges the importance of persuading all interested Governments to accede to the Agreement. It concludes with a warning that unless whaling is now strictly regulated, the stock of whales cannot fail to be reduced to a level at which whaling ceases to be remunerative.

SOME NOTES ON BIRD LIFE IN V.C. 65

J. P. UTLEY

ONE of the beauties of bird watching is that the observer finds no two seasons alike. There are always variations and there is ever the possibility of something unexpected turning up.

During the winter considerable numbers of Mealy Redpoll were in evidence in Coverdale, while a male Stonechat spent the season near Coverham. I have not previously observed this bird in Coverdale. The Fieldfares left earlier than usual, but the spring arrivals were fairly true to time.

Yellow Wagtails are not so common this year, but the dainty Grey Wagtail is met with much more frequently than for some time. Wheatears, though still very scarce, are to be found in larger numbers than last year, and I know several haunts throughout the V.C. that were empty last year but have been tenanted again.

Of the Hirundines, House Martins are here in much larger numbers than for some seasons, whilst Swallows and Sand Martins are much about normal. On the 15th April a vast flock of Swallows passed up the length of Wensleydale, but none of them appeared to take up residence there, for it was ten days later before the 'home' birds arrived. Swifts are plentiful but may be a little under usual strength.

The Corncrake is still almost an absentee. I have heard of its being recorded in Swaledale and Teesdale, but so far can find no evidence of its being a visitor to Wensleydale.

Several pairs of Pied Flycatchers nest in Swaledale. I think this bird is on the increase in the district.

Cuckoos are not so common this year, and the diminution appears more noticeable in females.

A Raven was observed at Coverhead in late spring, but I do not think it nested there.

Miss Rob, of Catton Hall, Thirsk, reported to me that a Nightingale had taken up residence at Baldersby. Actually in V.C. 62, it is only just across the border. This report has been observed and verified.

CORRESPONDENCE

The Editor, *The Naturalist*.

DEAR SIR,

The British Trust for Ornithology has asked me to undertake an enquiry into the song-periods of British Birds. It seems best to ask observers, in the first place, to concentrate on a few species. We have selected the following six species, namely—Mistle Thrush, Song Thrush, Blackbird, Chaffinch, Yellow Hammer and Skylark.

Observers are asked to record on special schedules the song of these species daily for a year, beginning from 1st August, 1937.

Schedules should be obtained from W. B. Alexander, University Museum, Oxford.

Yours faithfully,

H. G. ALEXANDER.

The Naturalist

YORKSHIRE NATURALISTS' UNION AT KELD

MAY 15th to 17th, 1937

THIS meeting proved to be very attractive, and more than thirty members, representing fourteen societies, were present during some part of the week-end. The remoteness of the area and lateness of the season gave little hope for such a successful gathering. Flowering plants were very backward and this may account for the apparent scarcity of some species.

Our President, Dr. W. H. Pearsall, had to leave before the meeting when reports of the sections were given. Mr. H. B. Booth, who took the Chair, remarked on what appeared to him to be the absence of the Bird Cherry; the trees were there, however, but hardly showing a leaf or flower bud. Higher up the Fell sides it was apparent that the snow-drifts had only just gone, in fact, in a gully on Nine Standards Rigg, above Tail Brig, a considerable amount was still to be seen. Tail Brig was beyond the scope of the excursion, but a search party went there on Saturday evening to look for the Mountain Avens; they were unsuccessful, but this high level limestone area seems a possible place for the plant. Dr. Pearsall pointed out that it is very heavily grazed by the sheep and this may have caused the plant to survive only in some of the deep crevices of the clints and so have escaped our search. The scarcity of plant and animal life in the streams evoked a good deal of discussion at the meeting, the Chairman mentioning the absence of salmon from the Swale, a subject dealt with by Mr. S. H. Smith in the *Naturalist*, 1932, pp. 115-120. Reasons suggested for this scarcity of life were the type of rock material, a large amount of broken-up shale being present, which does not offer a good foothold for either plants or animals, then lead-mining refuse must have done much harm when the mines were heavily worked and drainage from mounds of this lead mine detritus may still be a serious factor. The paucity of plants and animals noted by our members should be remembered in future discussions of this salmon problem.

Diptera were not plentiful if we except the swarms of the cottongrass daddy longlegs, *Tipula subnodicornis* Zett. (*plumbea* Auct.), that flew up when we crossed any area of cottongrass on the moors; the larvæ and imagos of this species must provide food for many of the moorland bird species. Another high moorland species seen in fewer numbers was *Tipula macrocera* Zett.; other species seen on the stream sides and wooded areas were *T. latealis* Mg., *T. montium* Egg., *T. variipennis* Mg., and *T. vittata* Mg. With these were *Pacilostola punctata* Schrk. and *Limnobia flavipes* F. A species of so-called fungus gnat which lives its larval stage most probably in a liverwort, was *Boletina plana* Walk. and a single *Dicranomyia morio* F. was caught. Three species of Bibio occurred, *B. reticulatus* Lw., *B. johannis* L. and *B. laniger* Mg. The hoverflies were scarce; there were a few Drone flies, *Eristalis* sps. and *Melanostoma scalare* F. The silvery *Argyria leucocephala* Mg. was the only Dolichopod, and in the Empids *Clinocera stagnalis* Hal. was on the water edge, while on flowers up the hillsides the shining black *Empis verralli* Coll. (*snowdoniana* Coll.) was fairly common. The list is completed by *Mydæa lucorum* Flin. and *Pegomyia nigratarsis* Zett.

Entomology: Mr. J. M. Brown writes: Insects in general were not at all plentiful during the week-end. The Small Tortoiseshell (*Aglais urticae* L.) and Green-veined White (*Pieris napi* L.) became fairly numerous in the sunshine. The Emperor moth (*Saturnia pavonia* L.) occurred on the uplands, as did also the Skipjack beetle (*Corymbites cupreus* F.). Several Burying beetles (*Necrophorus vespilloides* Hbst., *N. humator* Gz., and *Thanatophilus rugosus* L.) were found under dead rabbits and birds. Among the shingle by the stream sides, *Ochthebius*

exsculptus Gm., *Helmis maugei* Bd. and *Lathelmis volckmari* Pz. ; under stones near the streams, *Agonum ruficorne* Gz. ; and in Birkdale Tarn, *Agabus guttatus* Pk. were all plentiful.

Few Hymenoptera were seen. These included queens of the Common Wasp (*Vespa vulgaris* L.) and two or three Sawflies (*Dolerus* sp.).

Caddisflies and Mayflies were strangely scarce, and Stoneflies, though more numerous, were not abundant. Those taken as adults included *Perlodes mortoni* Klap., *Leuctra inermis* Kmpy., *L. hippopus* Kmpy., *Chloroperla torrentium* Pict., *Protonemura meyeri* Pict., *Nemoura marginata* Pict. and *N. cambrica* Steph. The Alderfly (*Sialis flavilatera* L.) was quite common by Birkdale Tarn, while *Glauconcorixa carinata* Sahlb. and *Sigara hieroglyphica* Duf., the first very abundant, occurred in the tarn, and in the River Swale the small Hemipteron, *Micronecta minutissima* L. was plentiful. At the margins of most of the upland becks the Springtail, *Agrenia bidenticulata* Tullb. was frequent on the stones and on the water.

Freshwater Biology : Mr. J. M. Brown writes : Three chief objectives occupied the attention of the members of the Freshwater Biology Committee, viz. : the wet rocks neighbouring the waterfalls, the River Swale and its tributary streams, and the Birkdale Tarn.

In the first case, Mr. Whitehead and the recorder made a detailed examination of the hygropetric fauna. *Orphnephila*, *Pericoma* and *Oxycera* as typical, together with various Chironomids, comprised the chief dipterous types, and these were present in considerable numbers. The characteristic Trichopterous larvæ were, however, missing from most of the places examined, only in one locality larvæ of *Beraea maurus* occurred in some number, but *Crunæcia irrorata* and *Tinodes assimilis*, which might have been expected, were not found. The snail, *Limnæa truncatula*, occurred in two or three situations. The conclusion drawn was, that compared with other similar localities previously worked, the fauna here was rather meagre.

The streams worked by Miss Harvie, Messrs. Whitehead and Allen, and myself, bore considerable likeness to one another. The bed was frequently solid rock-surface with only little loose material, but in most parts there was much stable boulder and loose shingle. In all parts the larger vegetation was very scanty, and the stone surfaces covered with a considerable amount of slimy material. The water was slightly on the acid side of neutrality. The first feature to strike one was the complete absence on the upper surfaces of the submerged stones of sand-tubes and tunnels due to *Psychomyia pusilla* and other Caddis larvæ, which were such a striking feature of Duerley Beck at Hawes. This absence was characteristic of other forms also, as the streams appeared to have but a limited fauna. Stone-case building Caddis larvæ seemed to be almost completely missing, *Silo* for example was not observed, and few *Stenophylax* and similar forms were seen. Web-forming Caddis larvæ were more frequent, and *Plectrocnemia*, *Rhyacophila* and *Hydropsyche* were found. Mayfly nymphs were more numerous, and the following genera were represented : *Ecdyonurus*, *Heptagenia*, *Rhithrogena*, *Siphonurus* and *Baetis*. Stonefly nymphs were represented by *Perla carlukiana* and *P. cephalotes*, of which the former seemed to be the commoner, *Nemoura* sp., *Leuctra* sp. and *Isoperla grammica*. Mollusca were practically absent, and except for the smaller becks, *Gammarus* also. Larvæ of *Helmis* and *Helodes*, and adults of *Helmis maugei*, *Lathelmis volckmari* and *Ochthebius exsculptus* occurred under submerged stones. Larvæ and pupæ of *Simulium* and various Chironomids, and in one of the smaller becks larvæ of *Pedicia rivosa* and *Dicranota* were noted.

One of my objectives during the week-end was a search for nymphs of *Ameletus inopinatus* which I thought likely to occur in the neighbourhood. This was successfully accomplished, as several specimens captured

by Mr. Allen and myself in the River Swale proved, on detailed examination later, to belong to this interesting species of Mayfly.

It may be noted that the Crayfish (*Astacus pallipes*) was not observed in any of the streams worked.

Some considerable time was spent on Monday in working round Birkdale Tarn, where it was hoped an interesting fauna might be discovered. Here again, so far as marginal collecting could show, the fauna was very limited. *Phryganea (obsoleta)* probably) was plentiful and was almost the only Caddis larva represented, while a single pupa of *Limnophilus griseus* was taken. *Glænocorixa carinata* was the most plentiful water-bug, a single specimen only of *Sigara hieroglyphica* being seen, and *Agabus guttatus* was the commonest beetle. The larvae of *Sialis* (probably *flavilatera*, as the imago was flying in plenty near by) occurred. A few *Nemoura* sp. represented the Stoneflies, and certain Chironomids the Diptera.

Conchology: Mrs. E. M. Morehouse writes: Once again I must thank the members of the Y.N.U. who brought me molluscs found on the different excursions among the ghylls, dales and hills around Keld; with their help the list given in the circular was much enlarged.

From the village of Keld to East Ghyll Force and the overhanging cliff to the left of the Ghyll were the most productive of any part visited. Quite the best 'find' was *Azeca tridens* Pulteney under stones by the side of the path leading down to East Ghyll Force and *Arianta arbus-torum* v. *alpicola* Fér. on the sides of the hills above the Force. The Fells were not good hunting ground and little was seen beyond slugs. On May 16th three *Arion ater* Linné were noted at approximately 1,450 feet, also Dr. W. A. Sledge found *Planorbis contortus* Linné in the same area. It seemed strange that both this shell of the mollusc and the first *L. truncatula* Müller found were malformed, the latter so much so that it might easily have been mistaken for a young *Limnaea pereger* Müller.

There were only three species of freshwater molluscs seen, including one dead *Ancylus fuvialis* Müller.

The following numbers refer to districts where species were found: 1, Keld; 2, Hindhole Valley; 3, Sleddale; 4, Kirkdale Beck; 5, Whitsundale.

Arion ater L., 1, 4, 5.

A. ater v. *aterrima* Taylor, 1, 3.

A. ater v. *alba*, 1.

A. ater v. *nigrescens*, Moq.-Tan., 1.

A. subfusca Roebuck, 1, 4, 5.

Limax arborum Bouchard-Chantereux, 1.

Milax sowerbyi Fér., 1.

Agriolimax lævis Miller, 1.

A. agrestis L., 1.

A. agrestis v. *reticulata* Moq.-Tan., 1.

A. agrestis v. *albida* Schrenk., 1.

A. agrestis v. *brunnea* Taylor, 1.

Vitrea alliaria Miller, 1.

V. cellaria Müller, 1.

V. nitidula Drap., 1.

V. pura Alder, 1.

V. crystallina Muller, 1.

V. rogersi B. B. Woodward, 1.

V. rogersi v. *umbilicata* Taylor, 1.

Euconulus fulvus Müller, 1.

Pyramidula rupestris Drap., 1, 2.

P. rotundata Müller, 1.

Helicella virgata da Costa, 1.

Hygromia fusca Montagu, 1.

H. rufescens Pennant, 1.

H. hispida L., 1.

H. granulata Alder, 1.

Arianta arbus-torum L., 1, 2, 3.

A. arbus-torum v. *alpicola* Fér., 1.

Helix hortensis v. *lutea* Moq.-Tan., 1.

Cochlicopa lubrica Müller, 1.

Azeca tridens Pulteney, 1.

Jaminea cylandracea da Costa, 1.

Balea perversa L., 1.

Clausilea bidentata Ström., 1, 2.

C. cravenensis Taylor, 1.

Planorbis contortus Taylor, 1, 3.

Limnaea truncatula Müller, 1.

Vertebrate : Mr. W. F. Fearnley writes : Apart from birds, the only Vertebrates reported were Rabbits and a few Common Lizards near Birkdale Tarn. The number of traps set in the area, however, would lead one to suppose that there must be an appreciable 'vermin' population.

Forty-one species of birds were noted, and it is probable that a more extended visit would considerably increase the list, as several quite common species did not happen to be reported, and nearly half the birds mentioned in the circular were missed.

The number of Meadow Pipits was a striking feature, many nests being found, some with eggs and some with young.

Wheatears were seen in several places, but not so abundantly as might have been expected.

The valleys of the streams were rich with the songs of various species of warblers and thrushes.

With the exception of the Tawny Owl, no birds of prey were seen.

Five Blackheaded Gulls and one or two Lesser Black-backed Gulls were located at Birkdale Tarn, but they are strongly discouraged by the keeper, who traps them.

Four Dunlin were seen feeding at the edge of the tarn.

A number of breeding pairs of Golden Plover were found, and also a flock of about fifty, presumed to be non-breeding birds.

The only duck seen was one Teal flushed at the edge of Birkdale Tarn.

The following is the list of birds reported during the meeting : House Sparrow, Chaffinch, Skylark, Grey Wagtail, Yellow Wagtail, Tree Pipit, Meadow Pipit, Wren, Dipper, Song Thrush, Blackbird, Ring Ouzel, Wheatear, Whinchat, Redstart, Robin, Blackcap, Garden Warbler, Willow Warbler, Sedge Warbler, Starling, Blue Tit, Great Tit, House Martin, Swallow, Sand Martin, Tawny Owl, Cuckoo, Blackheaded Gull, Lesser Blackbacked Gull, Woodcock, Snipe, Golden Plover, Lapwing, Dunlin, Common Sandpiper, Redshank, Curlew, Corncrake, Grouse, Teal.

Flowering Plants and Ferns : Dr. W. A. Sledge writes : Owing to the earliness of the holiday and backwardness of the season the flora was not yet at its best. One missed the colourful profusion of Globe Flower, Wood Geranium, Bird Cherry and Sweet Cicely, which at a later date add so much to the beauty of many of the Pennine dales in the North and West Ridings. The best display made by any one species was on old lead workings above Keld where quantities of *Cochlearia alpina* were in full flower. It was associated here with *Arenaria verna* but *Thlaspi alpestre* was absent and, although listed in the circular as occurring here, there is no mention by Baker of its occurrence higher than Arkengarth Dale. An attempt to verify the record for *Dryas* at Tail Brig was unsuccessful, though the nature of the ground was hopeful and a more thorough search than was possible on this occasion might well lead to its rediscovery. If it is found here however, it is almost certain to be on the Westmorland side of the boundary, where most of the limestone comes to the surface. Great Shunner Fell provided plenty of *Rubus Chamæmoris*—also seen on Kisdon Fell—and *Carex rigida*, and lower down the slopes in Sleddale *Ranunculus Lenormandi* was found in several peaty pools. A search for *Salix herbacea* amongst the grit boulders near the summit was unsuccessful. But these failures were offset by the discovery of *Equisetum variegatum*—previously unrecorded for Swaledale—on the rock face at Kisdon Force.

An abundance of *Salix phylicifolia* was seen by the Swale and its tributary streams ; indeed this willow is the commonest shrub on the river banks from Thwaite upwards. Many bushes were observed in

which the ovaries of some catkins were abortive and the forked styles bore more or less well-developed anthers at their extremities. I have seen this abnormality once before in the same species in Teesdale. *Salix caprea* is also plentiful, growing intermixed with *S. phylicifolia* but I did not see any *S. cinerea* or *S. aurita* hereabouts. The shrubs showed considerable variation and it is probable that hybrids occurred, though a certain decision cannot be made until mature foliage is collected later in the year. A verification of this point is desirable as the hybrid combination *S. caprea* - *phylicifolia* is of great rarity not only in Britain but on the continent. The only British plants which the late E. F. Linton would accept as of this parentage were from Killin, and since the publication of his monograph it has been found in only two other vice-counties. The records for this hybrid in Lees' Flora most probably belong to *S. cinerea* - *phylicifolia*, which is much more frequent.

The following list includes the more interesting species observed :

- 1—Woods at and below Kisdon Force, East Ghyll and Kisdon Fell.
- 2—Sleddale and Great Shunner Fell.
- 3—Scars and fields by Swale above Keld and Whitsundale.

<i>Ranunculus Lenormandi</i> F. Schultz	<i>Drosera rotundifolia</i> L., 1.
2.	<i>Peucedanum Ostruthium</i> Koch., 3.
<i>Trollius europæus</i> L., 1.	<i>Myrrhis odorata</i> (L.) Scop., 1.
<i>Cochlearia alpina</i> (Sweet) Wats.,	<i>Adoxa Moschatellina</i> L., 1.
1, 3.	<i>Asperula odorata</i> L., 1, 3.
<i>Sisymbrium Thalianum</i> (L.) Gay.,	<i>Cirsium heterophyllum</i> (L.) Hill, 1.
3.	<i>Hieracium anglicum</i> Fr., 1.
<i>Draba incana</i> L., 1.	<i>Taraxacum spectabile</i> Dahlst., 3.
<i>Arabis hirsuta</i> Scop., 3.	<i>Lathræa Squamaria</i> L., 1.
<i>Viola palustris</i> L., 1, 3.	<i>Salix phylicifolia</i> L., 1, 2, 3.
<i>V. lutea</i> Huds. and f. <i>amæna</i>	<i>Paris quadrifolia</i> L., 1.
Hensl., 3.	<i>Carex rigida</i> Good., 2.
<i>Stellaria nemorum</i> L., 1.	<i>Sesleria cærulea</i> (L.) Ard., 1.
<i>Arenaria verna</i> , L. 1, 2, 3.	<i>Juniperus communis</i> L., 1, 3.
<i>Sagina nodosa</i> (L.) Fenzl., 1.	<i>Taxus baccata</i> L', 1.
<i>Geranium sylvaticum</i> L., 1.	<i>Equisetum variegatum</i> (Schl.)
<i>G. lucidum</i> L., 3.	Weber, 1.
<i>Oxalis Acetosella</i> L. var. <i>subpur-</i>	<i>Cryptogamma crispa</i> Br., 3.
<i>purascens</i> DC., 1.	<i>Phegopteris polypodioides</i> Fée., 3.
<i>Prunus Padus</i> L., 1, 3.	<i>Ophioglossum vulgatum</i> L., 1.
<i>Rubus saxatilis</i> L., 3.	<i>Botrychium Lunaria</i> (L.) Sw., 3.
<i>R. Chamæmorus</i> L., 1, 3.	<i>Lycopodium lapinum</i> L., 3.
<i>Chrysosplenium alternifolium</i> L., 1.	<i>L. Selago</i> L., 3.

Lichens : Mr. W. E. L. Wattam writes : Keld and its immediate neighbourhood has an excellent and abundant lichen flora even though the arboreal features are somewhat limited. The boundary walls of highways and pastures and huge rock faces are picturesquely denized in a marked degree. The walls, composed either entirely of stones of the Undersett and Main Limestones, or of the silicious rocks of the Yoredale series, or, as mostly the case, of an admixture of both these types are pleasingly covered by species which thrive either only upon a calcareous habitat or are cosmopolitan to both the habitats indicated. Corticolous species are somewhat limited in number. The Ash (the dominant tree) being but sparingly clothed, the species which delight in a tree habitat are confined to the beech, mountain ash, wych elm, larch, Scots pine, and to palings. The moss-loving *Cladonias* are not in great abundance. Outstanding species are the large quantity of *Solorina saccata* Ach. in the moss sheets covering the rocks alongside the Swale, or thriving on

the soil of the rock niches and *Dermatocarpon miniatum* Th. Fr. with its variety *complicatum* Th. Fr. in the vicinity of the Kisdon Falls. The area traversed comprised the immediate vicinity of the village, the upper part of the Swale as far as Little Moor Foot, East Ghyll, and the lower part of the Swale as far as and including Hind Close Ghyll. The species listed were as follows :

- | | |
|--|--|
| <i>Pannaria rubiginosa</i> Del. | <i>Lecanara polytropa</i> Schaer. and f. |
| <i>Peltigera canina</i> Willd. | <i>efflorescens</i> Cromb. |
| <i>P. rufescens</i> Hoff. and var. <i>prætexta</i> | <i>L. tartarea</i> Ach. |
| Nyl. | <i>L. parella</i> Ach. |
| <i>P. polydactyla</i> Hoffm. | <i>L. cinerea</i> Sommerf. |
| <i>Solorina saccata</i> Ach. | <i>L. calcarea</i> Sommerf. |
| <i>Candelaria concolor</i> Wain. | <i>Acarospora fuscata</i> Th. Fr. |
| <i>Parmelia physodes</i> Ach. and var. | <i>A. smaragdula</i> Massal. |
| <i>tubulosa</i> Mudd. | <i>Pertusaria faginea</i> Leight. |
| <i>P. Mougeotii</i> Schaer. | <i>P. pertusa</i> D.T. and S. |
| <i>P. saxatilis</i> Ach. | <i>P. dealbata</i> Cromb. |
| <i>P. sulcata</i> Tayl. | <i>Gyrophora polyphylla</i> Hook. |
| <i>P. omphalodes</i> Ach. | <i>G. torrefacta</i> Cromb. |
| <i>P. conspersa</i> Ach. | <i>Cladina sylvatica</i> Hoffm. |
| <i>P. fuliginosa</i> Nyl. and var. <i>læte-</i> | <i>C. uncialis</i> Webb. |
| <i>virens</i> Nyl. | <i>Cladonia pyxidata</i> Hoffm. |
| <i>Cetraria glauca</i> Ach. | <i>C. fimbriata</i> Fr. |
| <i>Evernia furfuracea</i> Mann. and f. | <i>C. gracilis</i> Willd. |
| <i>scobicina</i> Cromb. and f. <i>ceratea</i> | <i>C. coccifera</i> Willd. |
| Cromb. | <i>C. flabelliformis</i> Wain. |
| <i>Xanthoria parietina</i> Th. Fr., and | <i>Lecidia coarctata</i> Nyl. |
| f. <i>congranulata</i> . | <i>L. confluens</i> Ach. |
| <i>Placodium callopismum</i> Mer. | <i>L. contigua</i> and var. <i>flavicunda</i> Nyl. |
| <i>Pl. flavescens</i> A. L. Sm. | <i>L. lithophila</i> Ach. |
| <i>Pl. murorum</i> D.C. | <i>L. crustulata</i> Koerb. |
| <i>Pl. citrinum</i> Hepp. | <i>L. rivulosa</i> Ach. |
| <i>Pl. ferrugineum</i> Hepp. and var. | <i>L. sanguinaria</i> Ach. |
| <i>festivum</i> A. L. Sm. | <i>Bilimbia sabuletorum</i> B. and R. |
| <i>Candelariella vitellina</i> Müll.-Arg. | <i>B. aromatica</i> Jutta (on mortar). |
| <i>Physcia hispida</i> Tuckerm. | <i>Bacidia umbrina</i> B. and R. |
| <i>Ph. cæsia</i> Nyl. | <i>Rhizocarpon obscuratum</i> Massal. |
| <i>Rinodina roboris</i> Arn. | <i>Rh. geographicum</i> D.C. |
| <i>Lecanora cartilaginea</i> Ach. | <i>Rh. calcareum</i> Th. Fr. |
| <i>L. muralis</i> Schaer. | <i>Rh. alboatrum</i> var. <i>epipolium</i> A. L. |
| <i>L. campestris</i> B. de L. | Sm. |
| <i>L. atra</i> Ach. | <i>Rh. confervoides</i> D.C. |
| <i>L. varia</i> Ach. | <i>Dermatocarpon miniatum</i> Th. Fr. |
| <i>L. conizæa</i> Nyl. | and var. <i>complicatum</i> Th. Fr. |
| <i>L. symmictera</i> Nyl. and var. <i>aitema</i> | <i>Verrucaria nigrescens</i> Pers. |
| Nyl. | <i>V. rupestris</i> Schrad. |
| <i>L. effusa</i> Ach. | <i>V. muralis</i> Ach. |
| <i>L. sulphurea</i> Ach. | |

Bryology (F. E. Milsom) : Members of the Bryological Section found good hunting ground near Keld, chiefly quite near the hotel. Birkdale Tarn, which was the furthest point explored, did not yield much. In fact, two members recall it most from the bewildering way the points of the compass shifted when they tried to get from the tarn to the main road !

The most conspicuous moss was perhaps *Hypon uncinatum* which was abundant in fine fruit. *H. stramineum* was also surprisingly plentiful

in almost any piece of wet grassy ground. Of the hepatics, perhaps the finest show was provided by *Madotheca cordeana*, which was hanging down from the rocks in large masses. Apart from the above, the district was not characterised bryologically by any striking features, and the gatherings were chiefly made in small quantities and by intensive search. The best was *Orthoecium rufescens* which was new to the district.

A full list is given below of all species noted.

MOSSES

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|---|--|
| <i>Andreaea rothii</i> Web. et Mohr. | <i>Bartramia cederi</i> Swartz. |
| <i>Tetraphis pellucida</i> Hedw. | <i>B. pomiformis</i> Hedw. |
| <i>Catharinea undulata</i> Web. et Mohr. | <i>Philonotis fontana</i> Brid. |
| <i>Oligotrichum hercynicum</i> Lam. | <i>Breutelia arcuata</i> Schp. |
| <i>Polytrichum juniperinum</i> Willd. | <i>Webera nutans</i> Hedw. |
| <i>P. commune</i> L. | <i>W. albicans</i> Schp. |
| <i>Seligeria doniana</i> C.M. | <i>Bryum pallens</i> Sw. |
| <i>S. tristicha</i> B. & S. | <i>B. pseudo-triquetrum</i> Schwaeg. |
| <i>S. recurvata</i> B. & S. | <i>B. capillare</i> L. |
| <i>Ceratodon purpureus</i> Brid. | <i>Mnium affine</i> Bland. |
| <i>Dichodontium pellucidum</i> Schp. | <i>M. var. elatum</i> B. & S. |
| <i>D. flavescens</i> Lindb. | <i>M. undulatum</i> L. |
| <i>Dicranella heteromalla</i> Schp. | <i>M. hornum</i> L. |
| <i>D. varia</i> Schp. | <i>M. punctatum</i> L. |
| <i>Blindia acuta</i> B. & S. | <i>Fontinalis antipyretica</i> L. |
| <i>Campylopus flexuosus</i> Brid. | <i>Neckera crispa</i> Hedw. |
| <i>C. pyriformis</i> Brid. | <i>N. complanata</i> Huebn. |
| <i>C. fragilis</i> B. & S. | <i>Homalia trichomanoides</i> B. & S. |
| <i>Dicranum Bonjeani</i> De Not. | <i>Pterygophyllum lucens</i> Brid. |
| <i>D. scoparium</i> Hedw. | <i>Leucodon sciuroides</i> Schwaeg. |
| <i>Leucobryum glaucum</i> Schp. | <i>Porotrichum alopecurum</i> Mitt. |
| <i>Fissidens bryoides</i> Hedw. | <i>Anomodon viticulos</i> Hook. et Tayl. |
| <i>F. rufulus</i> B. & S. | <i>Thuidium tamariscinum</i> B. & S. |
| <i>F. osmundoides</i> Hedw. | <i>Orthoecium rufescens</i> B. & S. |
| <i>F. adiantoides</i> Hedw. | <i>O. intricatum</i> B. & S. |
| <i>F. taxifolius</i> Hedw. | <i>Camptothecium sericeum</i> Lindb. |
| <i>Grimmia apocarpa</i> Hedw. | <i>Brachythecium rutabulum</i> B. & S. |
| <i>G. pulvinata</i> Smith. | <i>B. rivulare</i> B. & S. |
| <i>Rhacomitrium aciculare</i> Brid. | <i>B. purum</i> Dixon. |
| <i>R. lanuginosum</i> Brid. | <i>Eurynchium prælongum</i> Hobk. |
| <i>R. canescens</i> Brid. var. <i>ericoides</i> | <i>E. myosuroides</i> Schp. |
| B. & S. | <i>E. rusciforme</i> Milde. |
| <i>Barbula rubella</i> Lindb. | <i>Plagiothecium elegans</i> Sull. |
| <i>B. fallax</i> Hedw. | <i>P. denticulatum</i> B. & S. |
| <i>B. spadicea</i> Mitt. | <i>P. silvaticum</i> B. & S. |
| <i>B. cylindrica</i> Schp. | <i>P. undulatum</i> B. & S. |
| <i>B. convoluta</i> Hedw. | <i>Amblystegium serpens</i> B. & S. |
| <i>B. unguiculata</i> Hedw. | <i>A. filicinum</i> De Not. |
| <i>Weisia rupestris</i> C.M. | <i>Hypnum uncinatum</i> Hedw. |
| <i>W. crispata</i> C.M. | <i>H. commutatum</i> Hedw. |
| <i>W. viridula</i> Hedw. | <i>H. cupressiforme</i> L. |
| <i>W. verticillata</i> Brid. | <i>H. molluscum</i> Hedw. |
| <i>Trichostomum tortuosum</i> Dixon. | <i>H. palustre</i> Huds. |
| <i>Cinclidotus fontinaloides</i> P. Beauv. | <i>H. ochraceum</i> Turn. |
| <i>Encalypta streptocarpa</i> Hedw. | <i>H. stramineum</i> Dicks. |
| <i>Ulotia crispa</i> Brid. | <i>H. cuspidatum</i> L. |
| <i>Orthotrichum anomalum</i> Hedw. var. | <i>H. schreberi</i> Willd. |
| <i>saxatile</i> Milde. | <i>Hylocomium brevirostre</i> B. & S. |
| <i>Splachnum sphaericum</i> Linn. fil. | <i>H. squarrosum</i> B. & S. |
| <i>Aulacomnium palustre</i> Schwaeg. | <i>H. trequetrum</i> B. & S. |

HEPATICS

- Reboulia hemisphaerica* (L.) Raddi. *Pedinohyllum* var. *pyrenaicum* (Spruce) Kaal.
Conocephalum conicum (L.) Dum. *Leptoscyphus Taylori* (Hook.) Mitt.
Lunularia cruciata (L.) Dum. *Lophocolea bidentata* (L.) Dum.
Preissia quadrata (Scop.) Nees. *forma latifolia* Nees.
Marchantia polymorpha L. *L. cuspidata* Limpr.
Aneura pinguis (L.) Dum. *Chiloscyphus polyanthus* (L.) Corda.
Metzgeria pubescens (Schrank) Raddi. *Cephalozia bicuspidata* (L.) Dum.
Pellia fabbronia Raddi. *C. forma conferta* Huben.
Alicularia scalaris (Schrad.) Corda. *C. connivens* (Dicks.) Lindb.
Eucalyx hyalinus (Lyell) Briedl. *Odontaschisma sphagni* (Dicks.) Dum.
Aplozia crenulata (Sm.) Dum. var. *gracillima* (Sm.) Heeg.
A. riparia (Tayl.) Dum. *Calyptogea Trichomanis* (L.) Corda.
Gymnocolea inflata (Huds.) Dum. *Lepidozia reptans* (L.) Dum.
Lophozia badensis (Gottsche) Schiffn. *Diplophyllum albicans* (L.) Dum.
L. Muelleri (Nees) Dum. *Scapania nemorosa* (L.) Dum.
L. ventricosa (Dicks.) Dum. *S. undulata* (L.) Dum.
L. flarkii (Web. et Mohr) Schiffn. *Madotheca platyphylla* (L.) Dum.
Plagiochila asplenoides (L.) Dum. *M. cordeana* (Huben.) Dum.
Pedinophyllum interruptum (Nees) Pears. *Lejeunea cavifolia* (Ehrh.) Lindb.
F. dilatata (L.) Dum.

Fungi (Dr. J. Grainger): *Melampsora Rostrupii* Wagner, a Rust fungus attacking Dog's Mercury, was found by Mrs. Thompson. The fungus is not by any means common, though it has been recorded from all vice-counties except 61, S.E. Numerous 'mummied' fruits of *Prunus spinosa* indicated the presence of *Sclerotinia cinerea*, the fungus causing 'Wither-tip' of plums. The wild host probably plays a considerable part in providing infection of the cultivated trees.

Lophodermium Juniperinum de Not. was exceedingly common on the Juniper. Its black picnidia occurred on brown leaves, and could be seen on almost every plant. *Gymnosporangium clavariforme* D.C. was also a considerable parasite of the Juniper, and though more spectacular than *Lophodermium*, probably causes much less harm.

The fungus *Uromyces Ficariae* (Schum.) Lév. usually attacks the Celandine in extremely local patches. Some observations at Dean Clough, Huddersfield, suggest that it cannot attack plants at a distance greater than five yards from a centre of infection. The host and fungus were widespread on the banks at the sides of the path for a quarter of a mile westwards from the village of Keld. Spores of the fungus would not have to travel more than two feet from one host to another. This provides further evidence that distance is an all-important factor in controlling the spread of the heavy teleutospores of *U. Ficariae*.

Ecology (A. Malins Smith): Upper Swaledale showed mainly soils derived from the Yoredales which are, as pointed out in the Circular, composed of bands of limestone shale and sandstone. There was sufficient limestone throughout to keep the water which came through any depth of rock from being acid and in some places limestone tufa with its characteristic moss, *Hyphnum commutatum*, was freely formed. At the same time the shales were present in sufficient quantity to prevent alkalinity of soil developing anywhere but in restricted localities. The result was that the soils of this part of Swaledale clung rather closely round the neutral point and were scarcely ever at

the extremes of acidity or alkalinity. Even streams flowing directly from the moorland were not strongly acid, and one of these in Gt. Heddale, which interested the fresh-water biologists, was found to be very little under neutral at P_H 6.7. Only among the juniper at Hooker Mill Scar opposite Thwaite was any reading of high acidity taken, P_H being 5.0—5.4. The district has a high rainfall, but in general does not develop such a high proportion of heavy clay in the soil as is present in Wensleydale. A good deal of the district is above the present tree limit and woodland was not abundant and was restricted to the sides of the streams. The woodland developed in these conditions was of the Ash-Elm type, there being an almost complete absence of the Oak. As the soil lacked extreme alkalinity, and the climate was wet, some of the more characteristic herbaceous plants of dry limestone such as the Bloody Cranesbill, Stone Bramble, Baneberry, Salad Burnet and Mountain Melu-grass were absent or very scarce, while Herb Paris and Globe Flower were very restricted. The Rockrose, Hoary Plantain, and Shining Cranesbill were, however, found in suitable places.

It was probably the intermediate condition of the soil with regard to acidity which allowed of such a mixed assemblage of plants as was recorded on the south-facing slope below Kisdon Foss. The trees were chiefly Ash with an occasional Birch, the shrubs Hazel, Hawthorn, Mountain Ash, Rose, Blackthorn, and Bird Cherry. The ground vegetation was an open and very mixed association—Celandine abundant; Earthnut, Primrose, and Meadowsweet, V.C.; Male and Lady Fern scattered throughout with some Bracken; Barren Strawberry, Strawberry, Wood Sorrel, Yellow Pimpernel, and Enchanters Nightshade, C.; while Cuckoo Pint, Bugle, Lady's Mantle, Wood Aven's, Wood Cranesbill, Germander Speedwell, Mountain Willow-herbs, Wood Violet, Moschatel, and Cleavers were occasionally found. The soil supporting this very varied association had P_H 6.5 both on the surface and at a depth of 6 ins. On the opposite bank of the river was a wet spot supporting chiefly Globeflower and Melancholy Thistle and here the soil was P_H 7.3—7.4. A small amount of Herb Paris was found on a dry slope above limestone and the P_H here was about 7.1. On the vertical faces of limestone rock Yew was frequent and on the slope below in certain places the Ash-Elm wood had a ground vegetation chiefly of Dog's Mercury and Garlic. The Great Woodrush was frequent on stream sides and rocky ledges and its chief determining factor appeared to be a high water content of the soil. An interesting wet slope on old lead-mine refuse was gay with Alpine Scurvy-grass and had abundant Vernal Sandwort, though Alpine Pennycress, usually present in such soils, was absent. Here occurred also the Moonwort Fern, *Lycopodium selago* and *L. alpinum*. Here again the soil was neutral or slightly alkaline with P_H 7.0—7.2.

The moorland was chiefly notable for a very wide development of *Juncus squarrosus* moor which is probably the result of some interference with Cotton-grass moor by drainage or grazing. It was noticeable that drainage channels through the peat had been frequently cut and this would undoubtedly help to modify the usual development of Cotton-grass moor which one expects in such situations.

Special attention was paid to the Juniper of the district. Its most striking feature was its frequent occurrence. Three areas, one very extensive, on Kisdon Fell, a good area on Harkerside Moor, and odd streamside bushes on the Swale above Keld and in Whitsundale gave a general impression that this district was one in which Juniper was very much at home. Yet in all these areas the general appearance was of retrogression at the present time. As I stated last year (*Naturalist*, 1936, p. 177) this fits in with all that can be gathered of the recent

history of the Juniper from local farmers. In each Juniper area visited the same features were present :—

(1) Absence of seedlings and young plants of Juniper. Only two such were found in the whole district and both were on steep rock faces out of reach of grazing animals.

(2) Abundant heather and bilberry (with crowberry at Harkerside Moor). These were often growing up through small Juniper bushes and overtopping them and the whole aspect was one of successful invasion by these plants.

(3) Abundance of the leaf-spot fungus *Lophodermium* and occasional occurrence of the rust *Gymnosporangium*.

(4) At Harkerside Moor in particular was striking evidence of close cropping of the Juniper bushes to a height of two feet. Bushes lower than this were dense and close-cropped, while those higher were close-cropped below, with loose free growth of longer shoots above, the contrast being very striking. As the cropping was not higher than two feet the rabbit, not the sheep, must have been the cause and indeed it was stated by local farmers that sheep did not eat the Juniper.

The whole aspect of the Juniper then was one of gradual retrogression in a district which had, at any rate at one time, been well suited to its growth. It is practically certain that the fungus pests mentioned were not the cause of the decay, as they can scarcely have changed in their virulence in recent years. The determining cause appeared to be rabbit attack, which, by destroying seedlings and attacking the mature bushes rather than the Bilberry, Ling or Crowberry, in the end caused retrogression. It is essential to this view that there should have been a large increase of the rabbit population in the last hundred years. In view of the much greater strictness of game-keeping with its constant war on weasels, hawks, and other enemies of the rabbit, this seems a very likely occurrence. It points to a most fruitful line of research for the Ecological Committee to carry out on Moughton, namely, the enclosure of a Juniper area by rabbit-proof fencing.

Birkdale Tarn : The natural grandeur amid the everlasting hills in which the Tarn is situate is most inspiring. The crossing from the Kirby Stephen road was taken about one mile above the fall of the stream which carries away the surplus waters of the Tarn. The silicious rock debris all the way to the first ridge was amply clothed with lichen growths of the species *Parmelia saxatilis* Ach. in large silvery bosses, *Evernia furfuracea* Mann. with its form *ceratea* Cromb., *Cetraria glauca* Ach., *Lecanora polytropa* Schaer., *L. parella* Ach., *Gyrophora polyphylla* Hook, *Rhizocarpon obscuratum* Massal, *Rh. confervoides* D.C., *Rh. geographicum* D.C., *Lecidia coarctata* Nyl., and *L. rivulosa* Ach. Among the gramineous vegetation *Cladina sylvatica* Hoffm. is common, and bare patches were crimson with the fruits of *Cladonia coccifera* Willd. and an occasional boss of *C. deformis* Hoffm. Immediately the summit of the ridge is reached the Tarn is sighted, and the next area to be traversed is one controlled entirely by *Calluna* and *Erica cinerea* L., deeply channelled in all directions, most of the channels being filled with species of *Sphagna*. The facies of the peat hagsgs are clothed with *Cladonia coccifera* Willd. and *C. flabelliformis* Wain.; also prominent are masses of *Cladina sylvatica* Hoffm. and *C. uncialis* Webb., and on the bare pear *C. Flærkeana* Fr. with its var. *carcata* Wainio. On nearing the Tarn at its northern extremity a large area is controlled entirely by *Eriophorum vaginatum* L. and *Juncus squarrosus* L., and here were noted *Lecidia granulosa* Schaer. and *L. uliginosa* Ach. Prior to reaching the

Tarn there is a drier ridge dominated with *Calluna* and *Erica cinerea* L. with a little Bilberry, furnishing an abundance of the two *Cladinas*, *Cetraria aculeata* Fr., *C. glauca* and its var. *tenuisectum* A. L. Sm., small patches of the handsome *Cladonia bellidiflora* Schær and *Stereocaulon coralloides* Fr. The silicious stones of the Tarn surround give most of the species mentioned during the approach to the first ridge, and in addition *Parmelia omphalodes* Ach., *Cladonia pyxidata* Hoffm., *Lecidia contigua* Fr. and var. *flavicunda* Nyl. On leaving the Tarn at its southern end there is an area following the main surplus water channel with many deep cut valleys exposing the rock bed, and remains of birch and Scots pine in the peat. The swamps alongside contain a good deal of *Eriophorum angustifolium* Roth. The peat-loving lichens previously listed are always in evidence, and also occasional patches of *Parmelia lævigata* Ach. on exposed rock slabs. The dominant vegetative features continue to the cultivation zone at Tan Hill cottages.

NATURAL HISTORY IN B.B.C. PROGRAMMES

[Readers will be interested in the following notes on some future broadcasting items].

‘DOVE DAYS.’

NATIONAL, JULY 5TH, 9-35 P.M.

Charles Cotton, of Beresford Hall, author of the second part of *The Compleat Angler*, is the hero of D. G. Bridson's dramatic feature, ‘Dove Days,’ which is to be broadcast from the North in the National programme on July 5th. This famous fisherman and man of letters was born in 1630, and died in 1687; his literary works include a translation of Montaigne and a fantastic poem, called ‘The Wonders of the Peake.’ Izaak Walton and Cotton, the two ‘Compleat Anglers,’ spent much time together at Cotton's home, Beresford Hall, fishing in the River Dove. Bridson's programme, which was first broadcast in June last, consists of a number of dramatic episodes, largely based on scenes from *The Compleat Angler*. Songs and music specially composed by Crawford McNair will be rendered by Tom Case's Singers and the strings of the B.B.C. Northern Orchestra.

‘IN LONELY PLACES.’

WELSH, JULY 7TH, 9-40 P.M.

R. M. Lockley, author of *Dream Island* and frequent contributor to *The Countryman*, is to give the first talk in a new series entitled ‘In Lonely Places’ on July 7th. Off the South Pembrokeshire coast lies the island of Skokholm, now famous for its Bird Observatory. R. M. Lockley lives on the island of Skokholm for the greater part of the summer

and he marks the birds with rings for the elucidation of their migrations. He was co-author and producer with Julian Huxley of the nature film 'The Life of the Gannets.' His wife, Doris Lockley, is well known in South Wales as a painter and an exhibitor in oils.

‘ GWYDDOR GWLAD ’ (Nature Lore).

WELSH, JULY 12TH, 9-40 P.M.

‘ The Grand Old Man of Solva,’ H. W. Evans, will give his first talk in a new series entitled ‘ Gwyddor Gwlad ’ (Nature Lore) on July 12th. The speaker, who has given lectures in all parts of the country on our British wild birds, will speak this evening about some of the birds frequently found in Pembrokeshire.

‘ WILD LIFE ON THE RIVER.’

NORTH, JULY 13TH, 6-45 P.M.

Continuing the series of talks, ‘ Life Here and There,’ two well-known Northern naturalists are to discuss the bird life which can be seen on North country rivers. The speakers are J. Hughes Parry and G. M. King. Mr. King who has broadcast on several previous occasions—mostly about fishing—is the Superintendent and Manager at the Dee Fishery Office.

‘ WINGS ’—CHILDREN’S HOUR.

WEST, JULY 13TH, 5 P.M. APPROX.

A programme of birds in song and story will be broadcast for the children on Tuesday, July 13th, under the title ‘ Wings’ A talk by a bird-watcher will also be included.

REVIEWS AND BOOK NOTICES

Dictionary of British Wayside Trees, by A. W. Holbrook, pp. 235, 46 plates and numerous line drawings. 7s. 6d. Country Life, Ltd. This is a non-technical book designed to enable the reader to identify the common trees and shrubs, native and ornamental, at all seasons of the year. There are good photographs of the general appearance of the trees and line drawings of the leaves and fruits. The latter are generally adequate, although the leaf of ‘ Common Oak ’ is neither markedly that of *Q. robur* or *Q. sessiliflora*. The notes on the different species are good and easily read. There is no doubt that this will prove a very useful little volume especially for non-botanical persons who are

interested in trees. It is well printed and attractively and serviceably bound.

Plant Diseases of Great Britain, by G. C. Ainsworth, pp. 273 15s. net. Chapman and Hall. This is a list of the plant diseases found on economic plants in this country, with an adequate list of references to papers dealing with each disease. These not only appear to be reasonably complete but they refer to work in other countries dealing with the organisms concerned. The list of diseases and references is in itself valuable to the working mycologist—its value is, however, greatly increased by the summaries of results given under all the more important references. These enable the worker to sort out quickly the papers on different phases of investigation, besides giving a substantial amount of information. This is a very useful reference book.

Ecology in Town and Classroom, by R. Bracher, pp. 96, 12 illustrations. 2s. 6d. net. J. Arrowsmith, Ltd., London and Bristol. Some years ago the author of this little book produced one on 'Field Studies in Ecology,' to which this is a companion volume dealing with the plant ecology which can be carried out in or near a large town. It is primarily written for teachers and senior students, but it contains some interesting data on unusual habitats. These include the vegetation of the street, of waste ground, and of coal tips, as well as a more usual description of tidal river banks. Suggestions are given for classroom studies of complementary communities and of life form. The book contains much that is useful and informative and we may congratulate the author on his attempt to tackle a serious problem, that of teaching ecology in the environment of a large town. His book may be recommended to all interested in the practical side of the subject.

Transactions of the Bose Research Institute, Calcutta, Vol. X, pp. 240, 18s. net. Longmans, Green & Co., Ltd. This volume of researches from the Bose Institute, includes a number of papers of general botanical interest, and some mainly biochemical, recording the properties of Indian seeds and plants. S. C. Das and B. K. Palitt contribute papers on the effect of age on the activities of *Mimosa* leaves, and the effects of continuous and intermittent illumination on phototropism and on longitudinal growth. B. K. Dutt and A. G. Thakurta have investigated the after-ripening of seeds and also the effect of temperature variations on flower respiration. Human remains from a Malér cemetery are described by S. S. Sarkar.

Experiments in the Breeding of Oysters in Tanks, by H. A. Cole. Fishery Investigations, Vol. XV, No. 4. Ministry of Agriculture and Fisheries, pp. 56. 2s. net. This paper records the results of attempts to breed oysters in captivity and to find out the conditions required for the settling of the free swimming larvæ and their growth as 'spats.' It was found that the larval form is unable to utilise non-motile algæ on account of its inability to digest the cellulose walls. The young oysters, however, can thrive on such algæ as the food material appears to take a longer time in passage through the gut and consequently, enzymes appear to penetrate the cell wall. The settling of the larvæ appears to be accelerated by a food supply of motile flagellates, especially if these are minute and their protoplasts are naked.

Where to Look for Wild Flowers, by S. C. Johnson, pp. 143, 8 coloured plates and other illustrations. 2s. net. W. Foulsham & Co.,

London. This book attempts to describe the common wild flowers in entirely untechnical language—no botanical terms being used. For purposes of identification the flowers are divided into groups based on flower colour and then further sub-divided by the shape and number of petals they contain, *e.g.* yellow flowers, sub-classes with 4, 5 or 6 (or more) petals separate, pea-shaped, daisy-headed, snapdragon-shaped, other shapes. The treatment on the whole seems to be serviceable. Nearly 100 species are illustrated, most of them in colour and the form of the tree species is shown as well as the shape of their leaves. The work seems to be adequate for its purpose and is quite up to the average standard of other popular aids to wild flower names if not superior in the form of the treatment.

The Country Rambler's Complete Guide, by S. C. Johnson, pp. 143, 8 coloured plates and other illustrations. 2s. net. W. Foulsham & Co., London. This is a companion volume to the last—but it deals with everything which may be found in country walks. The coloured plates give birds, eggs, butterflies, moths, caterpillars, fishes, poisonous berries, and fruits, common fungi. Within the very severe limits imposed by size of the book (a pocket edition) there is an extraordinarily large amount of information in these pages and its value is often increased by notes as to size and habitat where these are helpful in assisting identification. This is in no sense of the term a book to aid formal study of any group of plants and animals. It might assist to create an interest in the various forms of life. It would be of great use to scouts or to country rambles without specialised knowledge and it may be suggested as a beginner's friend.

A Moth-Hunter's Gossip, by P. B. M. Allan, pp. 320, 4 illustrations. 7s. 6d. net. Philip Allan & Co., London. This is a book which most naturalists will enjoy and which most entomologists would find of interest. The author is evidently a keen naturalist and a keen observer. He has evidently read widely and thought much about moths and the results of his meditations are incorporated in the present volume. His interests lie more in the natural history of the animals than in their rarity and he confesses that much of the book deals with relatively common species—because he 'invariably takes the line of least resistance.' Nevertheless, the book is always interesting, and as it is well written, it is always very readable. Many of his experiments and observations seem to be capable of extension on a larger scale, and altogether he has reached a much higher level than most writers on natural history.

The Distribution, Breeding, and Feeding of Some Important Plankton Organisms of the South-West North Sea in 1934, by R. S. Wimpenny. Fishery Investigations, Vol. XV, No. 3. Ministry of Agriculture and Fisheries, pp. 56. 3s. net. This is an account of work on animal plankton done in the North Sea—dealing mainly with *Calanus finmarchicus*, *Sagitta elegans*, and *S. setosa*. The two former appear to depend on 'oceanic' water coming in from the north. *S. setosa*, however, is characteristic of the mixed North Sea or 'bank' water. It is concluded that the most abundant zones of diatoms are correlated with the greatest frequency of egg production and brood survival of the zoo planktons examined. The species examined were feeding most heavily on the diatom rich areas, and it is considered that this may result in an earlier advance to sexual maturity. On the other hand, some evidence exists suggesting that the effect of the diatoms may be indirect.

The Soul of the White Ant, by Eugène N. Marais, with a biographical note by his son, and translated by Winifred de Kok, pp. xvi+184. With 11 text illustrations and 12 plates. Methuen, 7s. 6d. This is a remarkable book in many ways. The author, who died last year, was an Afrikaans-speaking South African, who at first a journalist went on to the study of medicine and finally took up law as a profession. Further, he was obviously a born naturalist and published, in 'Afrikaans,' a number of articles on Termites, the so-called 'White Ants.' Years before Maeterlinck wrote his book, 'The Life of the White Ant,' Marais had put forward a daring theory by which he sought to establish a close comparison between a white ant colony, known as a 'termitary,' and the organism of a single living animal. This book is based on these earlier articles, and develops the author's startling theme in a scientifically convincing manner. The theory can perhaps be best summarised by a quotation from the author's own words: 'The termitary is a perfect analogy to the physical body of an animal, with its brain, its stomach and liver, its blood-stream consisting of two kinds of corpuscles,' etc. But neither extensive quotations nor a detailed summary could do justice to such an excellent piece of work. All naturalists should read this book. Those who commence it will not want to put it down before they have read it from cover to cover, and, having done so, will insist on their friends doing the same. The translation is so well done that it is hard to realise that the author himself wrote in another language.

A Guide to the Farne Islands, by T. Russell Goddard, pp. 39, with 19 illustrations and sketch map. Andrew Reid, Newcastle upon Tyne, 6d. We are very glad to accord a hearty welcome to this most useful little guide. Mr. Goddard's long and intimate acquaintance with this grand bird sanctuary is a guarantee that he knows what he is talking about, and he has succeeded in giving a most detailed account of the Farne Islands in very little space. The photographs of birds and seals are all very good, and so are the descriptions of the species dealt with. The sketch map is accurate and clear. In future editions, which we feel sure will be called for, might it not be as well to tell readers how to reach the Islands?

Design in Nature, by Professor James Ritchie, pp. 142, with 50 illustrations. Country Life, 5s. This book 'is based upon a series of broadcast talks to Discussion Groups, and explains in simple language the ways in which the living world has been moulded by some of the forces of inanimate nature—the all-prevailing influence of the sun, the succession of the seasons, the rhythm of day and night.' The line followed by the author is clearly indicated by the ten chapter headings which are: The Wheel of Life, Day and Night in the Living World, Changing Seasons and their Influence, Life in a Wasp's Nest, The Return of the Migrants, Songs and their Significance, The Seasons in a Pond, Insects and Flowers, Eggs and Individuals, The Fruitfulness of Life. Professor Ritchie has dealt admirably with a very fascinating subject. The book is most readable and copiously and appropriately illustrated.

The Mouse's Hour, by M. Fitzgerald, illustrations by K. F. Barker, pp. 32 with 11 pencil sketches. Country Life, 5s. In this pretty fantasy in verse a mouse prays for strength and stature to enable it to meet its numerous enemies on equal terms. The prayer is granted, and all goes well until the triumphant monster meets his own mate who is still a tiny creature. The poor giant now pleads to be made small again, and all ends well. The illustrations are good, except that the long-eared owl has been given cat's ears.

NEWS FROM THE MAGAZINES

The Entomologist for June contains 'Lepidoptera of the Oetzal in August,' by Brig.-Gen. B. H. Cooke; 'Odonata in 1936,' by H. G. Attlee; 'Descriptions and figures of new Peruvian Dryopidae (Coleoptera),' by H. E. Hinton; 'Some observations on a collection of Trichoptera from Lapland, with a note on the synonymy of *Asynarchus modestus* Hagen,' by J. Stainer; and several short notes and observations.

The Entomologist's Record for May contains 'Dieulefit, Digne, and Beauvezer in July and August, 1936,' by H. G. Harris (with plate); 'Notes on Collecting at South Benfleet, Essex, 1930 to 1936,' by R. W. Attwood; 'Notes on Collecting, etc.'; 'Current Notes and Short Notices'; and supplements 'The British Noctuae and their Varieties,' by H. J. Turner and 'New Lepidoptera from Iran,' by H. Bytinski-Salz and W. Brandt.

My Garden, monthly, 1/-, is now in its eleventh volume, three volumes being completed every year. *My Garden* is entirely different from the ordinary gardening paper. Each number is a small octavo, paper-covered book of 114 pages. The articles are of high literary merit and well illustrated. The current number (No. 43, July) contains nearly twenty articles, on a wide range of subjects which include: 'Shrubs,' by Prof. E. S. Lyttel; 'Hydrangeas,' by A. T. Johnson; 'Flower hunting in Teesdale Alpine Meadows,' by C. R. Falwasser; 'Bee Flowers,' by Eleanor Sinclair Rohde; and 'The Later Gentians,' by Paul Trevor. Every month *My Garden* contains one or two excellent coloured illustrations, those for July being *Aquilegia alpina* and *Cyclamen europaeum*, both natural size.

The Entomologist's Record for June-July contains 'Mermis thread-worm (Nematode) in Wasp (*Vespa vulgaris*),' by R. Beck (with plate); 'Some notes on assembling moths,' by P. B. M. Allan; 'A few random thoughts on mass movement of Lepidoptera or Pseudo-migration,' by H. J. Turner; 'New Finnish race of *Scolitantides orion* Pall., compared with others of the species,' by R. Verity; 'Effects of radiant heat on the development of some butterflies,' by O. Querci; 'Argentine Notes. I.—Papilionidae,' by K. J. Haywood; 'Early stages of Indian Lepidoptera,' by D. G. Sevastopulo; 'The genetics and status of *Xylomania* (*Xylomiges*) *conspicillaris* L. and ab. *intermedia* Tutt., and ab. *melaleuca* view,' by E. A. Cockayne; 'Notes on collecting, etc.,' and supplements 'The British Noctuae and their varieties,' by H. J. Turner, and 'New Lepidoptera from Iran,' by H. Bytinsky-Salz.

The Journal of the Society for British Entomology, Vol. I, Part 7, contains, as usual, numerous interesting notes, including '*Cleonus albidus* F. (Col. Curculionidae) in the New Forest,' by E. Dumper (a very rare British beetle); '*Macroglossa stellatarum* Linn. (Lep.), a possibly hibernated specimen'; and '*Eupithecia abbreviata* Steph. (Lep.) feeding on *Neottia nidus-Avis* Linn.,' by W. P. Curtis; 'Formicidae (Hym.) of the New Forest,' by A. N. Brangham; 'A note on some parasites of *Zygæna* (Lep.),' by G. D. Hale Carpenter; 'Bees and Conopidae (Dipt.),' by B. M. Hobby and E. B. Poulton (*Oncomyia atra* and *pusilla* with *Halictus* spp.); 'Notes on the larvæ and pupation of the geometrid moth *Phorodesma smaragdaria* F. (Lep.),' by E. B. Poulton; 'Parasitic Hymenoptera bred from British Lepidoptera-Heterocera by H. C. Hayward, M.A., F.R.E.S.' by B. M. Hobby; '*Conops strigatus* Wied. and other Conopidae (Dipt.) in the South of England, 1936,' by F. J. Killington; '*Sziladynus luridus* Fall. (Dipt., Tabanidae) taken in England and a further English locality for *S. montanus* Meig.,' by E. R. Goffe (Whixall Moss, Salop); '*Sphinx pinastri* L. (Lep.) in Bournemouth,' by F. C. Fraser; and 'A note on some Hymenoptera and Diptera bred from a dead cricket bat willow,' by E. McC. Callan.

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 128)

CRUCIFERÆ—continued

Alyssum incanum L.

Alien ; lane above Rigton, Hb., Craven.

Lunaria rediviva L.

Alien. Grosmont (Esk). Rev. E. A. W. Peacock.

Draba incana L.

Not in East Riding flora. Comes down to the stoney pastures of Burtersett, and as a 'washdown' to Aysgarth. (Ainley nr. Huddersfield ; W. Guthrie in *Phytologist*, 1860. A mis-assigned record, possibly *Alyssum incanum* L., but not likely to have been the calcipetral species.)

Erophila verna (L.) Meyer (*Draba*).

Running into forms according to site and exposure ; the broader—suppressed growth?—podded and inflated ones at highest levels and in the most exposed sterile ground, the elliptic silicled in richer earth at low levels.

Cochlearia officinalis L.

The lower-land larger, but not salt-fed succulent growths outcomes from the alpine with us. The seaside scurvy-grass I take to be the type and *alpina* Watson as at best a good variety of high inland rock ancinty. On my rockery sown seeds from Buckden Pike, Crayend, (J.F.P.), have re-appeared season after season and kept small and true, altering in no way. W. R. Linton gives like testimony.

C. anglica L.

Only in East Riding Flora. Muddy Humber shore, Welwick, J.F.R., *Nat.*, 1913, p. 83. Also at Marleet and Kilnsea.

C. Armoracia L. var. *macrocarpa* Wldst. and Kitb.

Sheepscar beck below market gardens ! Also sent for confirmation of name by Canon W. Fowler from Liphook.

Hesperis matronalis L.

Not included in East Riding Flora.

Wilckia maritima Scop. (*Malcolmia*).

'Virginia Stock' has often occurred in waste places.

W. africana (L.) F. von Muell.

Has been found at Hull docks, C.W., and on wool wastes at Meanwood !

Tetracme quadricornis Bunge.

App. Flo. Halifax, p. 315. On woollen waste at Box-Trees Mill, Wheatley, 1890, J.T.A.

Sisymbrium Sophia L.

An American variety, *S. incisum* Engelm., perhaps distinct, has occurred about malthouse yards, etc.

S. officinale Scop.

Has got up the Dales *via* the walled roads to 900 ft. We have both the typical downy and the smooth leiocarpous forms, but the latter is only a casual on 'warp' wharfing and hen-run waste as yet.

S. pannonicum Jacq. (**altissimum** L.).

A casual grain-brought alien has occurred at Brigg-flat, Sedburgh, J. Handly, 1902, and at Meanwood Lodge, 1901. Also Calder bank, Shepley Bridge, very tall with firm linear-segmented leaves. Now (1937) a fairly common alien.

S. orientale L. (**S. Columnæ** Jacq.).

Alien. Lidgett Park, Roundhay, A.E.B., 1904. 'Tips' by the Calder (*Flo. Hlfx.*), 1894 and 1896. Mirfield and Horbury (Lee) to Wakefield (J.C. spn !).

S. austriacum Jacq.

Alien. Shepley Bridge below Hirst's corn mill (Lee) ! *Halifax Flo.* gives Wheatley, 1894.

S. Thalianum T. Gay.

A follower of cultivation, but wide tracts of land on the coal measures without it. The var. *brevicaule* Dr. which retains its characters in cultivation, was found by A. Wilson on Cautley Crag.

S. Alliaria Scop.

Somewhat erratic in its sites, liking a rich nitrogenous matrix, if watched through some years in a station.

Erysimum cheiranthoides L.

Colonist. Old records are most interesting as fixing its immigrations. Near Wentworth, Hb. Nicholson, Vol. 8, fol. 142, carrying back its first observing to 1830.

E. virgatum Roth.

Alien. Goods sidings, Ravensthorpe, 1908, P.F.L. !

E. Perofskianum Fisch and May.

Garden outcast.

Conringia orientalis Dum.

Grain alien in a fair way to colonise in arable, etc. Corn mill 'tip,' Skipton ins, L.R., *Nat.*, 1903. Meanwood, 1900. O. Heslington, H.S., 1909. Mirfield, P.F.L.

Camelina.

Both species have occurred, especially *sativa* Cr. and its var. *fætida* Fr. The smaller capsuled *C. silvestris* Wallr. once found below flour mill, Tadcaster !

Brassica oleracea L.

Only North Riding Flora.

B. Rapa L. (agrestis).

B. nigra Koch. (Sinapis).

B. alba Boiss.

B. arvensis Kuntze.

B. persica Boiss.

Fellmongers yard, 1907, ! and on Calder side with other foetid *Brassicas*.

Erucastrum Pollichii Spenn. and **E. sativa** Miller.

On wharves where grain screenings have been tipped.

Diplotaxis tenuifolia DC.

D. eruroides DC. Has occurred.

Bursa pastoris Weber (**Capsella**).

Coronopus didymus Sm. (Senebiera).

I have come across one early occurrence ; Hb. Nicholson, Vol. 8, fol. 107, ' Barnby-upon-Dunn,' shewing it to have been brought with barged merchandise along the newly-cut canals as early as 1830.

C. procumbens Gilib. (C. Ruellii All.).

Thornhill Edge, P.F.L. ! The highest and most-at-home looking station in which I have ever seen it.

Lepidium latifolium L.

Waste ground by Hull docks, 1903, J.F.R.

L. graminifolium L. Casual.

L. Draba L. Casual.

L. perfoliatum L. Casual.

L. neglectum Thell. Casual.

L. ruderales L. Casual.

L. pseudo-didymum Thell. Casual.

L. africanum (Burm. f.) DC. Casual.

Lepidium incisum Roth. Casual.

L. virginicum L. Casual.

L. campestre Br. Casual.

L. Smithii Hook.

More a plant of the calcareous uplands, both West and East.

Thlaspi arvense L.

T. alpestre L.

Locally persisting because requiring some particular mineral constituent in the soil and rarely if ever flourishing on the river banks lower down as with so many of the Montanes. Not in East Riding Flora. 'Type' *sylvestre* Jord. Starbotten Wood, above Kettlewell, 1903, C.A.C. !

var. **virens** Jord.

Buckden Pike, 1,500 ft. O.D., J.F.P. Not glaucous, and, I believe, becoming '*sylvestre*' at the level of Cheetham's station in shade. As the long misspelled '*occitanicum*' of Jordan, a 'very glaucous' plant, it should be dropped as a state and non-British. Our Yorkshire 'Lead-Cress' as the miners called it, should be sunk in the greener Derbyshire form ; it certainly lacks, however, the wandy serratifoliate ensemble of the Winch Bridge, Teesdale plant, and yet I believe the one to be the product of the other.

Iberis amara L.

Casual. Not in East Riding Flora.

Clypeola Ion-thlaspi L.

Alien. Mirfield, 1907, P.F.L., J.F.P. et Auct.

Teesdalia nudicaulis Br.

Heck, near Goole, W.I. ! Rossington, 1907. Hb., H. E. Craven !

Hutchinsea petræa Br.

Not in East Riding Flora. Yore bank between Ripon and Tanfield under 100 ft. Y.N.U. meeting, 20/4/1896, W.F. and C.E.M., 'Adventive.'

About 1886 Wm. Todd (now of Passaic, U.S.A.) gave me a number of dried plants collected on Moughton *circa* 1869. He had no Continental plants, did no 'exchanging,' and a double spiked fruiting spn. of *H. alpina* (submitted to H. C. Watson) was among them. All were unnamed (only provisionally localised, not mounted), and I passed it as *H. petræa* of 4 or 5-inch stature until long after I left Hawes. Of course one cannot aver that it is not the product of one of the seeds

sown in the neighbourhood of Ingleborough by that party of botanists mentioned by Bree (*West Riding Flora*, 148).

Vogelia paniculata Hornem. Casual.

Myagrum perfoliatum L. Casual.

Calepina irregularis Thell. Casual.

Soria syriaca Desv. Casual.

Bunias orientalis L. Casual.

Rapistrum Linneanum Boiss and R. Casual.

R. rugosum DC.

Casual. (*orientale* DC. by mistake, *West Riding Flora*.)

Enarthrocarpus lyratus DC. Casual.

Crambe maritima L.

Not in *West Riding Flora*.

Cakile maritima Scop.

Not in *West Riding Flora*.

Raphanus Raphanistrum L.

R. Landra Moretti. Has occurred.

R. sativus L. Has occurred.

Reseda Phyteuma L.

Recent alien. Elland to Norbury, Shepley Bridge, P.F.L.
Heslington 'tip' near York. H. Stansfield.

Reseda lutea L.

R. Luteola L.

R. stricta Pers.

Sent from slag heaps, Grosmont on Esk !

Helianthemum Chamæcistus Mill.

var. *discolor* Reichb.

Bank to east of Edgehill Crag, Thorner ; and Skirethorns,
above Threshfield, J.F.P., 1902.

H. canum Baumg.

Not in *East Riding Flora*. *West Riding* record not since confirmed.

VIOLACEÆ

Viola sylvestris Lam.

V. Riviniana Reichb.

***Viola canina* L.**

Austwick Moss. Botanical Exchange Club Meeting, 1935,
W.A.S. Allerthorpe Common. G.A.N. and W.A.S., 1937

***V. odorata* L.**

Hybrids with *V. hirta* (*sepincola* Jord.), not uncommon.
Becca Banks, Aberford, and Boston Spa, W.A.S. and G.A.N.
Elloughton Dale, East Yorks., a huge form (\times *permixta*) ; Miss
Roper, 1937.

***V. hirta* L.**

***V. calcarea* (Bab.) Gregory.**

Ledstone Park ; Copgrove ; Boston Spa. W.A.S.

***V. palustris* L.**

All the following Pansy records have been vouched for
by the late Dr. E. Drabble :—

***V. variata* Jord.**

Barmby Moor, W. J. Fordham.

var. *sulphurea* Drabble.

Aberford, P. H. Arundel.

***V. Lejeunei* Jord.**

Adel, W.A.S. ; Morley, F. Ashwell in herb., W.A.S. ;
Thirsk, J.G.B. ; Cayton Carrs, E. C. Horrell ; Nunthorpe,
W.J.F. Allerthorpe Common, W.A.S.

***V. Lloydii* Jord.**

Baildon, Miss Page ; Bingley, J. Cryer ; Thirsk, J.G.B. ;
Askern, Nunthorpe, W.J.F.,

var. *insignis* Drabble

York, C. Rudd ; Bingley, J.C.

***V. agrestis* Jord.**

Beverley, H.H., in herb., W.A.S.

***V. segetalis* Jord.**

Yedmandale, Seamer Carrs, E.C.H., in herb. W.A.S. ;
Sowerby, J.G.B. ; Strensall, Adel, J.C.

***V. obtusifolia* Jord.**

Baildon, Miss Page ; Thirsk, J.G.B.

***V. ruralis* Jord.**

Sowerby, Thirsk, J.G.B. ; Askham, W.A.S.

***V. anglica* Drabble.**

Barmby Moor, W. J. Fordham.

V. Deseglisei Jord.

Thirsk, J.G.B. ; Ryhill, W.A.S. ; Flasby, F. Ashwell ;
Seamer Moor, E.C.H.

var. *subtilis* Jord.

Collingham, E.C.H., in herb. W.A.S.

V. arvatica Jord.

Wetherby, W.A.S.

V. derelicta Jord.

Ripon, Miss E. S. Todd.

V. lepida Jord.

Bawtry, E. and H. Drabble ; Huddersfield, T.W.B. Ingle ;
Malham Cove, A. E. Lomax ; Colt Park, Ribbleshead, P. M.
Hall and W.A.S. ; Newton-in-Bowland, J.F.P. ; Scampston
Hall, G.C.D.

V. lutea Huds.

Not in East Yorkshire.

POLYGALACEÆ

Polygala serpyllacea Weihe. (*P. depressa* Wend.).

P. vulgaris L.

Arncliffe Scar, Arncliffe, J.F.P.

forma *ciliata* Lebel.

P. dubia Bellynck (*oxyptera* auct angl.).

Holwick Scar, C. E. Salmon ; River beds, Tees, Lune and
Balder as well as Hudshope Beck in Durham ; Pateley Bridge,
near Lofthouse. Hall ings, Cottingham, 1902, J.F.R. and C.W.

P. amara L. forma *alpina* Rchb. fil.

Not in East Riding Flora. West Riding, 1883, sub. nom.
calcarea, H. T. Soppitt ; Goredale, 1903 ! L.R. and A.E.B. ;
Grassington, 1883, H. Andrews and H. T. Soppitt, in Hb.
W. West, spn. ! ; 1890, Wharfedale, T.W.W., in *litt*, both
these named at British Museum and Kew as *P. calcarea* F.
Schultz. A gathering by J. Cryer, 1901, called *P. amarella*
Crantz, by Professor R. Chodat. Many other localities in
Upper Wharfe and Aire, J.F.P. (Kettlewell, Arncliffe, Malham).

CARYOPHYLLACEÆ

Dianthus deltoides L.

Not in East Riding Flora. North Riding. Rillington,
1902, W.H. St. Quentin, J.F.R., m.s.

D. barbatus L. Alien Grosmont, also

Tunica prolifera Scop. and *Gypsophila viscosa* Murr.,
Shepley Bridge and East Hull ; *Saponaria vaccaria* L. and
orientalis L., Skipton, J.B. ; Calderside, P.F.L.

Saponaria officinalis L. Denizen.

Silene maritima With.

Still on Whernside, C.A.C., *Nat.*, 1937, 34.

S. Cucubalus Wibel. (*inflata* Sm.).

S. conica L.

In East Riding. Cornfields, Driffild, 1858, H. Ibbotson, spns. Hb. Whaley, with Lees Hb. at Bradford.

S. dichotoma Ehrh.

Not in Floras. Barmby Dun, 1906, H.H.C., recorded as *nutans*; Brotherton! Howden! and Hull Docks. Catton nr. Thirsk; Miss Rob.

S. noctiflora L.

S. anglica L. Alien.

S. Muscipula L. Alien.

S. inaperta L. Alien, Olympia Sidings Selby, W.A.S.

S. gallica L. Alien.

S. nocturna L. Alien.

S. nutans L.

Not in East Riding or North Riding. Shown to be still abundant at Knaresborough, Rev. W. C. Hey, *Nat.*, 1888, p. 331, and in 1900, H. J. Wilkinson. The Doncaster record *Nat.*, 1906, p. 224, was shown to be an error of identification.

Lychnis Flos-cuculi L.

L. alba Mill. (*vespertina* Sibth.).

L. dioica L. (*diurna* Sibth.).

L. Coeli-rosa Dur. f., *oculata*. Alien.

Cerastium erectum C. and G. (*Moenchia*).

Not in East Riding or North Riding. Doncaster Race-course, H.H.C., 1899.

C. arvense L.

C. viscosum L. (*glomeratum* Thuill.).

C. semidecandrum L.

Stellaria aquatica Scop.

S. nemorum L.

S. media Vill.

(To be continued)

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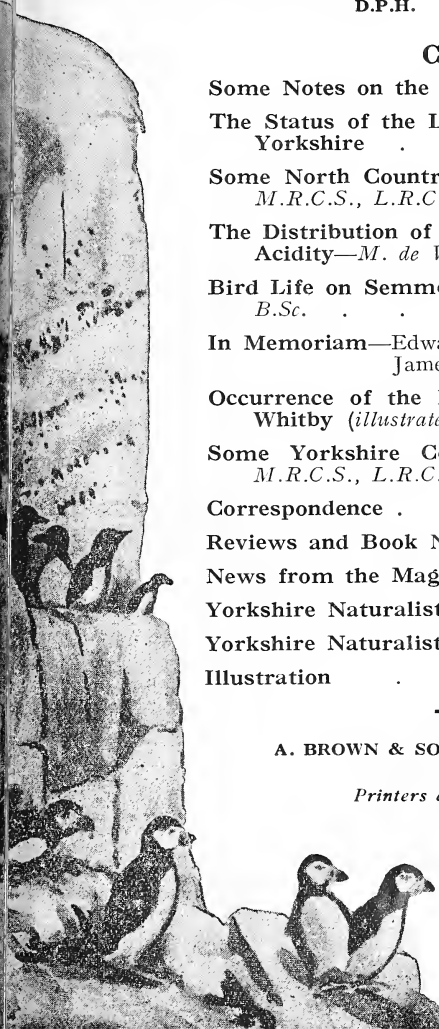
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SOME NOTES ON THE MOLE

T. HYDE-PARKER

IN view of the voluminous literature already available, it may well be thought that everything about moles has already been said. As, however, owing to many farmers having ceased to employ a mole-catcher, numbers have perceptibly increased in some districts, perhaps a word or two concerning *Talpa europaea* may not be out of season.

I do not propose to broach the much-disputed question as to whether the good done by moles, in aerating and turning over the soil in any way counterbalances the obvious harm they cause in other directions. I have heard men who should be in a position to judge state definitely that neglect in this respect is equivalent to penny wise, pound foolish. On the other hand, it should be remembered that to-day's rates of wages and working hours render it necessary for the farmer to curtail expenditure wherever possible ; and furthermore, owing to the skins being now of very little value, some professional trappers have voluntarily retired from business. There have been various bases for payment, the most usual in these parts being so much per acre, twopence being about an average figure. Occasionally the rate is based on the actual number of moles accounted for ; and further, there are cases where, when the same man catches both rabbits and moles, the former may be taken in lieu of payment. Before the war, about one penny per mole, or sometimes one penny per acre appear to have been paid. It is interesting to compare these figures with conditions in Sussex at the end of the eighteenth century, when an under-shepherd, whose yearly wage was but £6 'during winter caught the moles which at twopence each brought in a few shillings.' At that rate, a former 'mole-catcher to His Grace the Duke of Devonshire,' whose annual catch averaged nearly 4,000, would have made rather a good thing ! Of course, in addition to what the farmer paid him, the trapper had the skins which, until comparatively recently, sold at a good price. The fur is reputed to be very durable, and one reads of 'a tippet made of them being worn by eight children in succession, and after all this wear, when it had been stroked down with a brush, looked quite fresh and new again.' In this district, the metal trap is almost universally employed, the old stick and noose device being practically obsolete—though I seem to have come across it not so long ago in the North Riding. Poison is now much more in use than was the case when skins had a ready market.

It is, however, as a gardener and not an agriculturist that I speak ; and, however popular the 'velvet-coated gentleman' may have been in Jacobite circles, among

gardeners he can have few friends. My garden—unfortunately, in this respect—is surrounded on three sides by agricultural land, and when I add that there is a broad grass verge in front, it will be seen that I am open to enemy attack from every direction! Now, the conditions which obtain in a garden suit our friend ‘down to the ground.’ The well-dug and manured soil not only provides good hunting, but must be positive child’s play to a mole. It has often been said that moles work at certain stated times, but, in a garden anyhow, they observe no particular hours, and I am particularly troubled in periods of drought. The mole is an animal not only of an insatiable appetite (he will quickly starve to death), but also of insistent thirst, and it may be that the watering which a garden receives at such times, while it encourages worms, also gives the suggestion of a possible drinking supply. During June and July in a recent year, I managed to catch some five and twenty, despite the difficulty arising from the fact that the light, friable soil is liable to cave in at the first attempt to introduce a trap.

In a garden the great secret is to find, if possible, the entrance run. With a trap placed there, one may have quite a ‘run of luck,’ and catch a number in quick succession. Inside the garden, too, it is essential to tap the main runs, for many of the side alleys are more or less experimental, and may never be used again. They seem particularly fond of the junction of grass and worked soil, and will often burrow for yards along the border line. When working, as they will do, under snow, their tunnels are sometimes practically above ground, resembling, on a much larger scale of course, those covered runs made by certain Termites. They have their favourite places, too, that I cannot keep free though I repeatedly catch the delinquent and carefully fill in the run. Trapping seems the most effective way of dealing with them. I have tried poison and also calcium carbide, but both these methods have uncertain results—besides depriving one of the fiendish joy of gloating over one’s victims.!

The mole is always worth studying as a wonderful example of adaptation to mode of life. The almost cylindrical body; the unusual form and muscular development of the forelimbs; the reduction of the eye to a minimum (the diameter of the eyeball is only about one m.m.); and a coat in which hair with no ‘nap’ is combined with twitching muscles capable of quickly clearing it of every grain of soil. Unfortunately, when examining a dead specimen, one is not long in realising another feature: the multitude of ‘visitors.’ Of the forty odd British species of flea, that which infests the mole is the largest; and sometimes, as I view ravaged seed-bed or disfigured lawn, I could wish it even larger!

Although most of its life is spent under ground, the mole emerges oftener than is commonly suspected. Otherwise, of course, its many enemies—with the exception, perhaps, of the weasel, which I have more than once trapped in the runs—would not have much of a chance. I had a spaniel that frequently caught them in the grass. Foxes account for a good many. A friend of mine, when recently digging out some cubs, found, *inter alia*, eleven moles outside one earth and six more at another larder near by. To their avian enemies I can add one species which I do not remember seeing mentioned, the herring gull. Owls, of course, get them; and the heron, who, when hungry, will eat practically anything he can swallow, is also occasionally responsible. This despite the fact that they are reputed to have such an unpleasant, musky flavour that one scarcely wonders at their being pronounced unclean by Mosaic law! Notwithstanding persecution, however, they flourish practically from end to end of the land; and, if they are not indigenous to Ireland, that can scarcely be reckoned as yet another injustice by the Sister Isle.

It is sometimes suggested that a form of trap which would catch more than one mole at a time, would be much more effective than the type almost universally in use. The idea is no new one, and I shall perhaps be forgiven if I wind up with a quotation from a writer who died just three hundred years ago (Gervase Markham): 'Take a live mole in the month of March, which is their bucking or engendering time, and put it into a deep brass Bason, or other deep, smooth vessel, out of which the mole cannot creep, and then at evening bury it in the earth up to the brim, and so leave it, and the imprisoned mole will presently begin to skrike, or complain or call, so that all the moles in the ground will come to it, and, tumbling into the vessel, they are prisoners also, and the more prisoners, the greater will be the noise; and the more noise, the more moles will come to the rescue, so that I have seen fifty or sixty taken in one night and in one vessel or brass kettle.'

THE STATUS OF THE LESSER-WHITETHROAT IN WEST YORKSHIRE

In the April issue this year we published (pp. 75-78) an article on the above subject by Mr. Walter Greaves. The author now writes to say that he has been compelled to modify his views considerably in the light of more recent observations. Mr. Greaves says: 'The conclusions arrived at in the April article followed observations conducted for two and a half seasons, and each season's results appeared to harmonise with the others, but at the beginning of this season it was

obvious that in some cases there had been a mistake in the identification of the species. In order to refresh my memory and general impressions I made a reacquaintance with the species referred to, when on a visit to the Wirral peninsula and the neighbourhood of Chester in June this year. As a result of these fresh observations I must withdraw from the April article certain of the statements given as facts, and as a consequence some of the deductions made cannot now apply. The upshot is that the Lesser-Whitethroat must still be regarded as a rare bird in the parish of Halifax. Further, in the January (1937) issue of *The Naturalist*, p. 20, will be found these words: "The last few years Lesser-Whitethroats have become common in all parts of suitable ground in the parish of Halifax." This sentence must now be ignored.'

SOME NORTH COUNTRY PANSIES

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

IN view of the interest now being taken in our British pansies it may be advisable to place on record the localities of the specimens in my herbarium, all taken by myself and all named by the late Dr. Eric Drabble.

Viola segetalis Jord.

57, Derbyshire, Norton Lees, 27/9/04. 61, S.E. Yorks, Barmby Moor, 7/28. 66, Durham, Low Fell, 9/27.

V. deseglisei Jord.

62, N.E. Yorks, Nunthorpe, 17/7/10.

V. obtusifolia Jord.

57, Derbyshire, Bretton, oat field, 26/8/02. 66, Durham, Harraton, 3/10/08; Low Fell, 9/27.

V. ruralis Jord.

61, S.E. Yorks., Aughton, 5/09.

V. lloydii Jord.

57, Derbyshire, Norton Lees, 27/9/04, 28/7/05; Froggatt Edge, 15/9/05. 61, S.E. Yorks, Barmby Moor, 7/28.

V. variata Jord.

61, S.E. Yorks, Kiplingcotes, chalk quarry, 8/5/09; Escrick, clover field, 7/6/09; Barmby Moor 7/28 (small flowered).

V. variata Jord. var. *sulphurea* Drabble.

61, S.E. Yorks, Escrick, clover field, 7/6/09; Barmby Moor, 7/28.

V. lepida Jord.

57, Derbyshire, Froggatt Edge, 15/9/05.

V. polychroma Kerner.

57, Derbyshire, Bretton, 26/8/02; Eyam Moors, 26/8/02, 8/9/02, 1/9/09.

V. lutea Huds. and var. *amoena* Henslow.

57, Derbyshire, Bretton, 26/8/02. 65, N.W. Yorks, Middleton-in-Teesdale, 23/6/08.

V. anglica Drabble.

61, S.E. Yorks, Barmby Moor, 7/28.

V. lejeunei Jord.

61, S.E. Yorks, Skipwith Common, among furze, 28/8/09. 62, N.E. Yorks, Newby, Cleveland, 19/7/10.

THE DISTRIBUTION OF MOSSES IN RELATION TO SOIL ACIDITY

M. DE VALERA

ALTHOUGH mosses are frequently recognised as useful indicators of soil conditions, there is not much reliable information as to their distribution in relation to soil acidity in the British Isles. It may be conceded that their value as indicator plants would be greater if more information were available and consequently the following facts are placed on record. They were collected during a stay in Leeds and refer mainly to West Yorkshire, although a number of samples from the Lake District are included for comparison. I am indebted to Dr. W. H. Pearsall for these, and some additional records by him are also included. For these my thanks are due. Otherwise, the data refer mainly to soils near Leeds on grit areas (G.) or magnesium limestone (M.) and to soils on carboniferous limestone (L.) or slate (S.) in the Ingleborough or Grassington districts. These different areas are shown in the text by the letters given in brackets.

The measurements of hydrogen ion concentration were made with a quinhydrone electrode and a saturated calomel electrode and potentiometer. The instrument was checked at intervals against standard buffer solutions, and the results are given as pH values. The fresh soil was mixed with twice the volume of distilled water before adding the quinhydrone. The soil samples were taken from immediately below and among the rhizoids of the mosses. These superficial soils are commonly more acid than the deeper layers in which higher plants root. The samples were taken between November and March, when most of the mosses were vegetatively active. Each sample was from a place where the moss was growing well and where it could be regarded as dominant over a small area. Mixed samples are not given. Hence the pH values given are for *typical* stations and no attempt has been made to find the maximum range for each species. Undoubtedly this might be wider than is indicated by the date given here. The names of the mosses are those given in Dixon and Jameson's Handbook.

RESULTS

The data are given below as pH values, tabulated under species, with the nature of the underlying rock indicated by a preceding letter, as stated previously.

Mnium hornum : G. 3.15, 3.21, 3.7, 3.79, 3.66, 3.94, 3.85, 3.85, 3.6, 4.0 ;

M. 3.5, 3.38 ; L. 4.0, 4.04 ; S. 3.70, 3.90, 3.98, 4.24.

M. undulatum : M. 4.32, 7.78, 8.18 ; L. 5.86.

M. affine : M. 7.78, 8.20, 8.21.

- Dicranella heteromalla* : G. 3·25, 3·26, 3·29, 3·32, 3·5, 3·52, 3·52, 3·6, 3·63, 3·64, 3·70, 3·82, 3·94, 4·0; M. 3·58, 3·88.
Dicranum majus : S. 3·38, 3·43, 3·68, 3·76, 3·78, 3·82, 4·08.
D. scoparium : L. 6·78; S. 4·24; G. 3·41.
Fissidens taxifolius : G. 5·39; M. 8·18, 8·46; L. 6·25.
F. bryoridies : M. 4·54.
Catharinea undulata : M. 4·04, 5·15; S. 3·90, 4·39, 5·98.
Polytrichum commune : G. 3·78; S. 3·70, 3·78, 3·82.
P. piliferum : L. 4·46; S. 4·07.
Trichostomium tortuosum : L. 7·35; 7·40, 7·42, 7·44, 7·45.
Eurhynchium praelongum : G. 4·29, 4·59, 5·06, 5·39; S. 5·15, 5·98; L. 6·42, 6·66; M. 4·84, 6·34, 6·36, 7·78, 7·88, 8·18, 8·20.
E. piliferum : M. 4·98.
E. murale : M. 8·10, 8·35.
Plagiothecium elegans : G. 3·52, 3·60, 3·64, 3·66, 3·70, 3·85, 3·94, 4·0, 5·06 (by stream).
P. denticulatum : G. 3·43, 3·79; L. 5·86; M. 4·04, 5·12.
P. sylvaticum : G. 3·32, 3·75; S. 4·04, 3·89.
P. undulatum : S. 3·56, 4·04, 3·90.
Hypnum cupressiforme : S. 3·12, 3·56; G. 3·56, 5·88; L. 7·45. The forms below PH₄ are var. *ericetorum*.
H. molluscum : L. 7·12, 7·39, 7·45, 7·57, 7·80.
H. commutatum : L. 7·69, 7·81, 7·72. The second and third samples were growing on thick tufa.
H. Schreberi : S. 3·19, 3·56, 3·82, 4·12; G. 3·63.
Hylocomium loreum : S. 3·68, 3·82, 3·85.
Leucobryum glaucum : G. 3·50; S. 3·38, 3·68.
Rhacomitrium lanuginosum : L. 5·32.
Bartramia pomiformis : L. 6·82.
Campylopus flexuosus : G. 3·34, 3·56, 3·59.

In considering these data, it should be emphasised that if one took samples where the mosses were not growing luxuriantly, a wider range of pH values might well be obtained. Thus a sample including a sparse mixture of mosses, *Mnium hornum*, *Dicranella heteromalla*, *Plagiothecium elegans*, and *Hypnum cupressiforme* had a pH of 4·28 although the first three of these mosses do not usually occur on soils above pH 4·0 when growing luxuriantly. The mosses for which a large number of estimates are available, suggest that a fairly reliable idea of the pH range can usually be obtained from a few samples and this may be especially the case when the samples are drawn from stations overlying different rocks. The influence of the soils available for study must undoubtedly colour the results to some extent, and of course, the influence of climate and topographic conditions must also have effect on soil requirements. It is possible, for example, that by streams, mosses may gain a foothold and grow well on soils on which they are normally absent (cf. one record at pH 5·06 for *Plagiothecium elegans*). Thus, while an attempt is made below to generalise from the data, it must be understood that this attempt describes typical habitats in the area examined.

For mosses for which there are three or more records,

we may say that the species appear to fall into four main habitat groups as follows :

1. ON SOILS USUALLY BELOW pH 4.0—

<i>Mnium hornum</i>	<i>Plagiothecium undulatum</i>
<i>Dicranella heteromalla</i>	<i>Hypnum Schreberi</i>
<i>Dicranum majus</i>	<i>Hylocomium loreum</i>
<i>Polytrichum commune</i>	<i>Leucobryum glaucum</i>
<i>Plagiothecium elegans</i>	<i>Campylopus flexuosus</i>
<i>P. sylvaticum</i>	

2. ON NEUTRAL OR ALKALINE SOILS, +pH 7.0—

<i>Mnium affine</i>	<i>Hypnum molluscum</i>
<i>Trichostomium tortuosum</i>	<i>H. commutatum</i>

Bartramia pomiformis might possibly belong to this class, as well as typical limestone mosses such as *Neckera crispa*.

3. ON SOILS USUALLY ABOVE pH 4.0—

<i>Mnium undulatum</i>	<i>Fissidens taxifolius</i>
<i>Eurhynchium praelongum</i>	<i>Catharinea undulata</i>

With more extensive data, this group could possibly be subdivided further. Thus while three of the mosses occur even on alkaline soils, *Catharinea undulata* has not so far been observed on soils above pH 6.

4. From the records, three mosses appear to tolerate a wide range of acidity, including the most acid soils. These are *Plagiothecium denticulatum*, *Dicranum scoparium*, and *Hypnum cupressiforme*. The polymorphic nature of the latter moss is well known, and it may well include several eco-species. The two former mosses were not observed on alkaline soils.

Although the data are not as full as it was originally hoped to make them, they do serve to show that the commoner mosses may often be used as indicators of soil conditions. This appears to be true particularly of those characteristic of the more acid soils.

NEWS FROM THE MAGAZINES

The Entomologist for July contains 'A Fortnight's Butterfly Hunting in Savoy in July, 1935,' by F. W. J. Jackson; '*Amathuxidia*, *Zeuxidia*, and *Thauria* (Lep. Amath.): Descriptions of new Sub-species and Revisional Notes,' by C. J. Brooks; 'The Massey Collection,' by W. Rait-Smith; '*Lophopteryx cuculla* Esp.: Random Notes on Breeding, etc.' by C. N. Hawkins; and several notes and observations.

The Entomologist's Monthly Magazine for July contains 'New Records of British Cecidomyiidae (Diptera), with Taxonomic Notes on certain Genera,' by F. W. Edwards (with figures); 'A new *Melanthrips* (Thysanoptera) from South Africa,' by Prof. J. D. Hood (with figures); 'On the variation of *Sphodromerus decoloratus* Finot (Orthoptera, Acrididae) in North Africa, with a Description of a New Related Species from Morocco,' by K. H. Chapman (with figures); 'The Parasites of British Birds and Mammals. XVI. Records of Ixodoidea (Ticks),' by G. B. Thompson; 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe and several short notes.

BIRD LIFE ON SEMMERWATER IN JULY

JOHN P. UTLEY, B.Sc.

ON the 15th July, I set out for Lake Semmerwater with the object of determining the status of the Great Crested Grebe on that stretch of water tucked away in the hills.

It was a good day for bird observation ; overcast but clear and warm, though as my car nosed round the corners and up the hills leading from Bainbridge the sky became heavily ' mackerelled ' and the prospect of early rain more pronounced.

Semmerwater was a gem of light and shade, quiescent yet delicately shimmering. Too often I find her lashed by winds or else appearing dull and sullen, but on this occasion she was all smiling and welcome.

Soon I was in position, the greater part of the lake stretching away in front of me and melting into meadows and pastures which sloped up to the blue hills and faded into distance. On the far side of the lake three white cows lay on the shingle contentedly chewing ; behind them was a bed of dense reeds.

Innumerable sand martins skimmed across my field of view and grey wagtails flitted about to right and left, one pair feeding young ; yet the surface of the water seemed cleared of all life, and broken only by faint ripples from the light breezes and the rings made by fish which were very much ' on the rise.'

Suddenly the water in front of me broke and a bird appeared, but before I could get the glasses to my eyes it had disappeared ; surely here was luck—only one kind of bird on this inland water could act like that. I waited, glasses at the ready, yet scanning this way and that. Then again, two hundred yards away from the first rise it came up again, this time in full view—a glorious example of the male Great Crested Grebe. For twenty minutes I watched him : perhaps I ought to say for five of that twenty, for I am sure he spent fifteen of them under water. Constantly I searched around hoping for developments, but apart from a flight of duck away beyond the centre of the lake and indistinguishable, there was nothing.

Then the grebe worked towards the near reeds on my right and out of them, paddling gracefully, was his lady. They curtsied and bowed and circled each other, then he presented her with some food and promptly disappeared to reappear some distance away. The female then ' sat ' on the water, flapped her wings, and lo ! as if the action was magical, three baby grebes were there who commenced darting and bobbing round their mother with remarkable alacrity as she bestowed morsels upon them. Then they crept under her wings again and she just ' rode the water ' while her husband hunted out in the centre of the lake.

In the meantime, the ducks previously mentioned had moved across the lake and were now by the aid of glasses within good viewing distance. There were twelve of them, eleven agitated, erratic blobs of glistening black and one duller with a lighter throat—common scoters, eleven males and one female. When they occasionally quietened down and swam easily, my wife, who was with me, said they made the whole picture seem like a beautiful etching, but a fish leaping right out of the water very near to them sent them scurrying in all directions.

Returning to the grebes—it was feeding time once more, and this time the male bird was assisting in apportioning the spoil, but soon he dived out to the centre of the lake again. Another bird came out of the reeds and in some way was not altogether to the female grebe's liking, for she edged it away to a safe distance. The bird was a female gadwall and appeared quite solitary, for during my stay it was not joined by any other.

The cows still lay on the far side of the lake and dozing on the water in front of them was a flight of mallard. My wife nudged me, and looking round to the left I saw fifteen to twenty teal swimming about the edge of the reeds: they did not venture into open water and soon were lost in the thick cover.

It had begun to rain now, and the reed bunting which had been chirping incessantly quite near, became silent. A heron flapped with lazy speed down the length of the lake to fish in the River Bain. For the third time the male grebe—after an absence of over half an hour—returned with food; this both birds administered, then they suddenly dived together leaving the young ones darting about on the surface. They reappeared quite near and the male bird took charge of the young while the female went diving out into the lake. After playing with his family for a few minutes the male bird collected them and disappeared among the reeds.

It was raining heavily now; the cows got up, stretched bodies and legs and made for the pasture. We too packed up and made for home—and a cup of tea.

[*Note on above*: I am of the opinion that these Great Crested Grebes are from Malham Tarn. Last year a pair returned to the Tarn for a few days, and found a pair of Mute Swans building a nest on the site of last year's grebe's nest, whereupon the grebes left and did not return, but for the first time to our knowledge a pair nested on Semmerwater. As the grebes did not return to Malham Tarn this year, I suggested to Mr. Utley that he might look for them at Semmerwater. The Great Crested Grebe is usually more a bird of the lower levels, and very few pairs will venture to nest at an altitude of 1,200 feet, which is that of Malham Tarn.—H.B.B.]

In Memoriam

EDWARD WALTER WADE

THE announcement of the death of Mr. Edward Walter Wade, which took place in July at Ferriby, Parkstone, Dorest, will be received with regret by his many friends in the Y.N.U.

Mr. Wade joined the Hull firm of Messrs. Richard Wade, Sons & Co., Ltd., in 1880, and after the amalgamation he was with Messrs. Gabriel, Wade & English, Ltd., until he retired in March, 1929, and went to live in the south.

He was a keen ornithologist and an acknowledged authority on bird life. Familiarly known as 'Sandy' Wade, he wrote a pamphlet on 'The Birds of Flamborough Headland,' with the assistance of Mr. T. Sheppard, Director of Hull Museums.

He spent a good deal of time studying the bird visitors to Keyingham Marshes, Bempton, and Speeton Cliffs, and there is a collection of birds' eggs in the Hull Museum to which he made additions.

With the late T. Audas, Mr. Wade was responsible for recording occurrences of rare birds in the East Riding during the past 30 or 40 years.

He leaves a widow and one daughter.

JAMES THACKRAY GREEN

(April 28th, 1866—July 9th, 1937.)

WE regret to record the death of James Thackray Green, of Thornton-le-Dale, which took place on July 9th.

'Jim,' as he was usually known, was a lovable character, and not only a keen naturalist and observer and a contributor to many journals, but was principally useful to a whole army of botanists, ornithologists, geologists and archæologists who constantly consulted him to benefit from his local knowledge.

He was born, and lived the whole of his life, at Thornton-le-Dale, and until he retired, was a gamekeeper at one or other of the local estates. Many important relics of the Stone and Bronze Ages are in the Museum at Hull, as a result of his collecting, and he was always willing to give information on any of the many subjects with which he was familiar. Rare plants and rare mammals and birds were constantly recorded by him, and an hour or two in his company was always a sheer enjoyment.

He was one of the best shots in the North of England. In late years he presided at the Café adjoining his home, where was a collection of local curiosities likely to interest the visitors.

He leaves a widow and four sons, to whom we extend every sympathy.—T. S.

OCCURRENCE OF THE RED-SPOTTED BLUETHROAT AT WHITBY

F. SNOWDON

AN adult male Red-spotted Bluethroat (*Luscinia s. svecica*) was captured in a greenhouse at Green Lane, Whitby, on 13th May last, and came into the possession of Mr. James P. Stamp, the well-known bird fancier. Unsuccessful efforts



Photo by]

[W. J. Clarke

Red-spotted Bluethroat ♂ at Whitby, May 13th, 1937

were made to keep it alive, suitable food being not available. The bird was presented to the Whitby Literary and Philosophical Society and was sent to Mr. W. J. Clarke, of Scarborough, for confirmation of its identity. Mr. Clarke very kindly mounted the specimen, which is now in the Whitby Museum. The Red-spotted Bluethroat is a regular migrant on the East Coast (in small numbers usually, and scarcer in spring than autumn).

SOME YORKSHIRE CONOPIDAE

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

THE flies of the family Conopidae form a compact little group of some nineteen British species. They are of moderate size, variable in colour, with the abdomen slender at the base, with a thicker tip. The antennae are inserted close together on a prominence and are three jointed. The proboscis is slender, elongate, and retractile. The family is divided

into the Conopinae with a longer antenna, and the Myopinae with shorter antennae. The larvæ are parasitic on Hymenoptera and Orthoptera.

The genus *Conops* Linn. contains six British species and is said by Dr. Sharp to be parasitic on species of *Bombus*, *Chalicodoma*, *Osmia*, *Vespa*, and *Pompilus* and also on some Orthoptera. (Cambridge Natural History.)

Conops (Conopilla) ceriiformis Mg. should occur in Yorkshire. It is widely spread from Devon to Aberdeen and is found on Composites such as *Carduus* and *Hieracium* and *Eupatorium* and also on *Mentha* and *Origanum* in August and September.

Conops flavipes Linn. is our commonest species. The larvæ are parasitic on *Vespa* and *Bombus* and the perfect insect is wasp-like in colour and form. It is recorded by Dufour from *Osmia tridentata* and a conops larva has been found in *Andrena trimmerana*, possibly this species. Its Yorkshire localities are Skipwith and Allerthorpe Commons (61), Forge Valley and Hovingham (62), Nidd (Scotton Banks), Leeds and Wistow (64). It is found on Composites in July and August and is on record from Derbyshire.

Conops quadrifasciata De G. should occur in Yorkshire as it is widespread from Somerset to Inverness and has been taken in Notts. and Derbyshire. It is found on *Mentha*, *Senecio*, *Carduus*, and *Origanum* from July to September.

Conops (Brachyglossum) signata Wied. is only on record as a British species on a pair from Tubney Wood. (J. Collins.) (See *E. M. M.*, 1910, 273; 1913, 174.) This is a central and southern European species found near nests of *Vespa vulgaris*. (Rondani.)

Conops strigata Mg. A rare species occurring in August and taken from Devon to Notts. (Langford Moor. One. J. W. Carr.)

Conops vesicularis Linn the largest British species and rare. Principally confined to the New Forest but occurring as far north as Notts. (Langford Moor. Two males. June. J. W. Carr.)

The genus *Myopa* F. contains six species of a brownish colour which are parasitic on bees of the genus *Andrena*.

Myopa buccata Linn. a widely distributed and not uncommon species, occurring from the New Forest to Perthshire and taken in Notts. and Durham. Its Yorkshire localities are Allerthorpe Common and Barmby Moor (61), Gormire, Ryedale and Helmsley (62), Bingley, Wilsden, Keighley, Harden Moor, Royd Moor (63), and Adel and Barden (64). It occurs on dandelions, buttercups, and wood spurge from May to early July.

Myopa dorsalis F. a rare species with few localities in the south of England, occurring in August.

Myopa fasciata Mg. should occur in Yorkshire. It is distributed from the New Forest to Perthshire from June to August and is fond of ragwort.

Myopa occulta (Mg.) Zett. A rare species taken at Wigsley Wood in Notts. in July and also at King's Lynn, Norfolk.

Myopa polystigma Rond. An uncommon species apparently reaching its most northerly distribution in Yorkshire at Bubwith (61), and Adel (64). It occurs in Notts. and is found on umbellifers in May and June.

Myopa testacea Linn. Widely distributed from the New Forest to the Forth, Scotland, occurring in Notts. and taken in Yorkshire at Bubwith (61), Wheatley Wood (63), and King Lane (Adel) (64). It occurs on umbellifers and hawthorn blossom in May and June.

The genus *Oncomyia* Desv. contains three species which are attached to bees of the genus *Halictus*.

Oncomyia atra F. should occur in Yorkshire as it occurs in Derbyshire and is widespread from the New Forest to Arran. It is found from July to September and is associated with *Halictus morio* and *nitidiusculus*.

Oncomyia pusilla Mg. is less widely distributed in the south of England and attached to the same bees as *atra* F. It occurs in July to September and its European distribution is southern.

Oncomyia sundewalli Zett. is only known from Scotland, having been taken near Oban and in Arran.

The genus *Physocephala* Schin. has two British species with a thin, elongated abdomen.

Physocephala nigra De G. is a rare species extending from the New Forest and Dorset to Rannoch and Loch Assynt. It has been taken in Yorkshire at Hutton Bushel by Mr. E. G. Bayford. (V.C. 62.) It occurs in May and June and is fond of rhododendrons and heather.

Physocephala rufipes F. is not uncommon and widespread from the New Forest to Dalmeny. It has been bred from a nest of *Bombus lucorum* in Norfolk by Nicholson and from a nest of *Vespa vulgaris* in Suffolk by Tuck. It occurs in Cheshire and Notts. and in Yorkshire has only been taken on Allerthorpe Common (61). It is found in July and August and is partial to thistles, ragwort, scabious, and *Rubus*.

The genus *Sicus* Scop. contains one British species, *ferrugineus* Linn. which is attached to species of *Bombus* and *Anthidium*. It is widespread from the New Forest to Aberdeen and is recorded from Lincs., Derbyshire, and Notts. In Yorkshire it has been taken at Skipwith and Allerthorpe (61), Sandburn and Ugthorpe, Hellwathbeck and Hovingham (62), Wheatley Wood and Hirst Wood, Goole (63), and near Leeds (64). It occurs from June to August and is found on thistles, ragwort, blackberry, and *Hypochaeris*.

The genus *Zodion* Ltr. contains but one greyish little species, *cinereum* F. taken in Yorkshire on Allerthorpe Common on buttercup in June (61) and at Fylinghall (62) on the same plant. It is not a common species and Yorkshire seems to be its northerly limit.

CORRESPONDENCE

To the Editors of *The Naturalist*.

THE HANDBOOK OF BRITISH BIRDS

SIRS,

As many ornithologists are already aware, a new edition of *A Practical Handbook of British Birds* has been for some time in preparation. We should be very grateful to any of your readers who would now send us notes of any omissions or errors in the original work, and of any *unpublished* observations which would make the work more accurate and complete. Should secrecy in regard to locality be necessary this will be rigidly respected.

Since the *Handbook* was completed twelve years ago such a vast amount of matter relating to distribution, migration, breeding habits, and food has been published both at home and abroad, that the revision made necessary is a very heavy task involving the rewriting of most of these sections.

Moreover, field characters, habitat, song, and 'habits' generally, to which very little space was devoted in the original work, will be greatly expanded, and these new sections are being undertaken by Mr. B. W. Tucker (with Mr. Charles Oldham's kind approbation).

The new work will be very fully illustrated in colour, the aim being to show all the birds in as far as possible all their plumages. Such a series of illustrations is not now available to British ornithologists, and it is hoped that this new feature will greatly enhance the usefulness of the work, especially to observers in the field.

The original *Practical Handbook* will be, in fact, so much a new work that we consider an alteration of the title to *The Handbook of British Birds* justified.

As it is proposed to publish in five volumes at six-monthly intervals beginning next spring we shall be glad to have now any notes relating

to the Order Passeres. It would be a convenience if observations concerning breeding habits or food were sent direct to the Rev. F. C. R. Jourdain at Bellevue Road, Southbourne, Hants., and all other notes to me at Gracious Pond Farm, Chobham, Surrey.

Yours faithfully,

H. F. WITHERBY.

REVIEWS AND BOOK NOTICES

The Observer's Book of British Wild Flowers, compiled by **W. J. Stokoe**, pp. 224, 220 illustrations, 100 in colour, Price 2d. 6s. Frederick Warne & Co., Ltd. This little book is intended primarily to enable the observer to carry with him a means of identifying the commoner wild flowers. In the interests of space, the species chosen are limited to two hundred, all of which are illustrated. The botanical terms employed are few and they are given in an introductory section, explaining the structure of a flower and the form of leaves. The descriptions are based on those of Step's 'Wayside and Woodland Blossoms' and the illustrations taken and reduced from Sowerby's 'English Botany.' This is an extremely useful pocket book primarily for the non-botanical.

The Observer's Book of British Birds, by **S. Vere Benson**, pp. 224, with 200 illustrations, 100 of which are in full colour. Warne. 2s. 6d. This is a wonderful production for the money. All the birds which the ordinary field naturalist is likely to see on his rambles are described, with notes on haunts, structure of nests, eggs, foods, and notes and songs. The illustrations are well-executed reductions of the famous 'Coloured Figures' of Lord Lilford, those which are not in colour being pictures of birds whose identification in the field is not helped much by a coloured representation. The size of the volume ($3\frac{3}{4}$ ins. \times $5\frac{3}{4}$ ins.) makes it just the thing for the pocket or rucksac.

The Lore of the Lyre Bird, by **Ambrose Pratt**, pp. 72, with 16 illustrations. Robertson and Mullens, Melbourne. 5s. English naturalists have heard and read of the Australian Lyre Bird, but how many people on this side of the world realise that this bird is a marvellous songster and mimic. It is rare, very seldom seen, although more often heard. The book under review is almost entirely devoted to the story of 'James' an unaccountably tame specimen which developed a deep affection for a lady who lives hermit-fashion in a cottage about 24 miles from Melbourne in the tall bush of the Dandenong Mountains. Observations of this bird have been made by many visitors, some of whom have taken very interesting photographs. Mr. Pratt, who is the President of the Royal Zoological Society of Victoria, presents the whole story in a fascinating and yet scientific manner, and his book can be heartily recommended to all naturalists.

The Ways of Birds, by **Thora Stowell**, pp. 174, with 46 photographic illustrations and drawings in the text. Country Life. 5s. This volume, in the publisher's 'Design of Life Series,' deals with every aspect of bird life, the subject being treated in an elementary and most readable manner, and covering such matters as structure, song, migration, courtship, eggs and nests, young, and modes of feeding. The species referred to are not confined to those on the British List, and the numerous illustrations include some of the best examples of bird-photography we have ever seen.

The Intelligence of Animals, by **G. C. Grindley**, pp. vii+70. Methuen ('Monographs on Philosophy & Psychology'). 2s. 6d. This

is an excellent summary of all the most important modern work dealing with investigations into the working of the minds of animals. It is an admirable introduction for those who wish to acquaint themselves with the methods and conclusions of students of animal psychology, and the author gives useful suggestions for further reading.

The Animal Year Book, Vol. 4, pp. vi + 164, with 8 photographic illustrations and 2 maps. University of London Animal Welfare Society. 2s. 6d. We are very glad to welcome this new volume recording the fine progress of a Society deserving the enthusiastic support of all field naturalists. Here we have an impressive series of articles dealing with a variety of subjects from the campaign against the gin trap in Great Britain to Africa's vanishing fauna, and many other current problems. We should like once more to call attention to the aims of 'ULAWS.' They are: (1) To lessen the pain and fear inflicted on animals by man. (2) To enlist the influence of university men and women on behalf of animals. (3) To promote interest in the welfare of animals. (4) To obtain and disseminate accurate knowledge of problems relating to animal welfare. (5) To extend the movement to other universities, at home and abroad.

NEWS FROM THE MAGAZINES

My Garden for August is well up to its previous high standard. There are nearly a dozen articles including the fourth one on 'Shrubs' by Professor Lyttel; 'Night-scented Flowers' by Eleanor Sinclair Rohde; and Captain Johns' regular feature, 'The Passing Show.' The coloured plates are of *Hieracium villosum* and *H. aurantiacum*, and *Geranium silvaticum*.

Science Progress for July (Vol. XXXII, No. 125) contains much of interest to the naturalist. Professor P. G. H. Boswell has an informative article on 'The Floor of the Ocean,' in which is brought together present-day knowledge of the subject with some speculations on the geological future of the ocean deposits. Other articles include 'Earthquake-swarms in Japan,' by Dr. Charles Davison, 'The Relation of Boron to Plant Growth,' by Dr. R. W. G. Dennis, and the usual very full notes on 'Recent Advances in Science.' The contribution which we think will have the greatest interest for our readers is one entitled 'The Language of Bees,' by Professor K. von Frisch, of the University of Munich. The article is a reprint of a lecture given by Professor von Frisch at University College, London, in March of this year. The writer has made many experiments with bees in an observation hive and has reached some interesting conclusions. These are best set out in the author's own summing-up, part of which we take the liberty of quoting, but all who are interested in the life of the honey-bee should read the whole of this fascinating article. Professor von Frisch sums up as follows: 'If a new kind of flower begins to bloom in a certain region, it is discovered after some time by scout bees. The first bees find the flowers full of nectar. They find plenty of food and after homing they report the discovery by dancing, and in addition indicate the species of flowers by means of the scent adhering to their bodies. The bees communicated with fly out and look for the flowers with this specific scent. Flying out in all directions, they find out in the shortest time the plant which has commenced to bloom, wherever it is in the entire flying district. Where there are already collecting bees, the scent of the scent organ makes it easier for fresh questing bees to find the good feeding-place. . . . If different plants begin to bloom at the same time, the flowers with the sweetest nectar cause the most vigorous dancing and, incited by the scent adhering to the body of the dancer bee, the largest number of bees fly to the best feeding plants.'

YORKSHIRE NATURALISTS AT HUTTON LE HOLE

JUNE 5th, 1937

THE ground investigated at this meeting lay between Hutton le Hole and Kirbymoorside ; the latter place was found most convenient for the meeting room, and the valley, known as Douthwaite Dale, was easily reached by car. Some fourteen societies were represented at the meeting where upwards of fifty members and associates were in attendance. Mr. E. R. Cross, of Scarborough, was in the Chair, and two new members, Mr. E. G. Highfield, of Pickering, and Miss K. A. Clarke, of the Training College, Bingley, were elected. A vote of thanks to the landowners who had given us permission to pass over their estates was moved by Mr. J. P. Utley and enthusiastically carried. It is hospitality of this kind which makes the work of the Union possible. Reports, which follow, were given by the recorders at the close of this successful meeting.

Ornithology : Mr. J. P. Utley writes : On taking a first glance at Douthwaite Dale an ornithologist would be justified in exclaiming ' Here I shall find a variety of birds.'

On the western side the steep banks are heavily wooded with timber of varying ages, interspersed here and there with plantations of young trees ; also in places undergrowth of bramble, briar and bracken is fairly thick. On the lower slopes and in the valley bottom are open pastures divided by mixed hedges.

On the eastern side there are patches of old, heavy woodland, but on the whole it is more open and rises steeply with flanks covered in the lower regions by gorse and mountain grasses, and as the heights fade away in the distance the amount of heather increases. On top of the lower heights is some flat arable land.

Away down in the valley bottom the River Dove winds sinuously, here quiet and still ; there rippling over clean washed gravel, and for the greater part of its length overshadowed by trees.

The route taken was up the western side and down the east. An excursion was made into each type of woodland and the stream was visited at fairly regular intervals. On reaching Lowna Bridge the dale was crossed and the return journey made over the moorland, arable land and gorse braes.

The most outstanding birds noticed were Jay and Woodcock in the higher western woodland, Green Woodpecker near Lowna, Blackcap in the hedgerows below Lowna. Stonechat, Whinchat and Garden Warbler also near Lowna ; all three species very agitated at being disturbed and evidently nesting. A Merlin was observed on the high spur between Lowna and Douthwaite Hall. Linnets were in evidence among the gorse, and near the dam at the lower end of the dale a Kingfisher was observed. A Great Spotted Woodpecker was seen in the woods at the foot of the dale.

From personal observations no Wagtails were seen, but other members of the party reported both Pied and Yellow. No Wheatears were seen nor were any Owls seen or heard.

The following is a full list of birds noted :—Blackbird, Song Thrush, Mistle Thrush, House Sparrow, Tree Sparrow, Robin, Wren, Wood Warbler, Willow Warbler, Chiffchaff, Garden Warbler, Blackcap, Spotted Flycatcher, Linnet, Lesser Redpole, Yellow Hammer, Greenfinch, Chaffinch, Hedge Sparrow, Great Tit, Blue Tit, Coal Tit, Stonechat, Whinchat, Redstart, Skylark, Tree Pipit, Meadow Pipit, Carrion Crow, Rook, Jackdaw, Jay, Magpie, Starling, Cuckoo, Wood Pigeon, Pheasant, Partridge, Woodcock, Snipe, Lapwing, Dabchick, Dipper, Kingfisher, Sandpiper, Swift, Swallow, House Martin, probably Sand Martin since there were evidences of nesting near Lowna, Green Woodpecker, Great Spotted Woodpecker, Kestrel, Merlin, Sparrow Hawk.

In addition other members of the party mentioned Ring Ousel, Corncrake, Pied Wagtail, Yellow Wagtail. A member of the party camping near Lowna Bridge reported Tawny Owls having been heard at night.

Dr. W. Hobson adds : The songs of Whitethroat, Chiffchaff, Willow Warbler and Wood Wren were heard. The Wood Wren in particular was kept under observation for some time, and it was only by tracing the song, 'the long passionate trill' as Hudson calls it, that it was possible to identify the bird. The broad yellow eye stripe was quite distinct. The type of territory was somewhat different from the usual Wood Wren type. At the top of the hillside a pair of Woodcock were flushed from deep bracken. The call of the Jay was distinctly heard. In more open country a Robin had a nest with six eggs. Other birds seen were Kestrel, Heron, Kingfisher, Male Bullfinch, Pied Flycatcher, Spotted Flycatcher, Tree Creeper.

Perhaps the most interesting record was the finding of a Pied Flycatcher's nest with three eggs. The nest was placed in a hole in the stump of a tree, situated on the side of the river. As is usual the male bird immediately gave away the fact that there was a nest by his behaviour. Another pair of Pied Flycatchers were noticed but no nest was located.

Conchology : Mrs. Elsie M. Morehouse writes : Mr. W. G. Bramley sent me the molluscs from Hutton le Hole, they were found during his search for mycological specimens. I append the list as follows :—*Helix nemoralis* v. *lutea wartelia* Moq., 1 (2 3 4 5), *Arianta arbustorum* Linné, *Helicella caperata* Montagu, *Hygromia hispida* Linné, *Clausilia bidentata* Strom, *C. laminata* Montagu.

Insect Records : Mr. G. B. Walsh writes : Mr. R. Hayes and the Recorder joined forces in searching for Lepidoptera and Coleoptera. Consequently methods were almost restricted to beating and sweeping, with the result that the records bear a one-sided facies. The weather, though fine, was sunless, so that flying insects were scarce. However, the recorded captures, especially in Coleoptera, served to show that the district is rich entomologically, and would well repay prolonged investigation.

HYMENOPTERA.—The only species noted were *Bombus agrorum*, *B. hortorum*, *B. terrestris*, and *Apis mellifica*.

LEPIDOPTERA.—On the wing we noted *Pieris brassicae*, *P. rapae*, *P. napi*, *Euchloë cardamines*, *Argynnis euphrosyne*, *Hydriomena impluviata*, *Xanthorhō sociata*, *Abraxas sylvata*, *Hepialus lupulinus* ; and the following larvæ were beaten : *Diloba coeruleocephala*, *Cosmia trapezina*, *Cheimatobia brumata*, *C. boreata*, *Hybernia defoliaria*, *H. marginaria*, *Phigalia pedaria*, *Oporabia dilutata*, *O. autumnata*, *Hydriomena elutata*, and *Tortrix viridana*.

HEMIPTERA.—These were distinctly scarce. Those noted were *Acanthosoma dentatum*, both nymphs and adults, *Calocoris alpestris* nymphs only, *Liocoris tripustulatus*, *Monalocoris filicis*, *Anthocoris nemorum*. Among the Aphididæ, *Euceraphis betulæ* was common on Birch, *Chaitophorus aceris* on Sycamore, and the leaves of one Guelder Rose were almost completely destroyed by *Aphis viburni*.

COLEOPTERA.—Beetles were numerous, and some uncommon species were noted, especially *Polydrosus mollis*, *Orsodacne cerasi*, *Stenostola ferrea*, *Cantharis abdominalis* var. *cyanea* and *Apion pallipes*. The following were noted in the field :

Deronectes rivalis Gyll.
Amischa analis Grar.

Tachyporus obtusus L.
T. chrysomelinus L.

- Oxytelus tetracaratus* Block.
Anthobium primulae Steph.
A. ophthalmicum Payk.
A. torquatum Marsh.
Anthophagus caraboides L.
Brachypterus urticae F.
B. glaber Steph.
Enicmus minutus L.
Corticarina gibbosa Herbst.
Byturus tomentosus F.
Atomaria ruficornis Marsh.
Meligethes aeneus F.
M. viridescens F.
M. picipes Steph.
Lathelmis volckmari Panz.
Esolus parallelopedus Mellié.
Adalia 10-punctata L.
Melolontha vulgaris F.
Athous haemorrhoidalis F.
A. vittatus F.
Agriotes pallidulus Illig.
Dolopius marginatus L.
Melanotus rufipes Herbst.
Limonius aeruginosus Ol.
Canthoris abdominalis var. *cyanea*
Podabrus alpinus Payk.
Rhagonycha limbata Thunb.
Cantharis pallida Goeze.
C. pellucida F.
C. nigricans var. *discoidea* Steph.
Grammoptera ruficornis F.
Clytus arietis L. (caught by Mr. Cheetham.)
Stenostola ferren Schr. (A single specimen beaten from lime.)
Orsodacne cerasi L.
Luperus flavipes L.
Phytodecta pallida L. (common).
Chrysomela polita L.
Longitarsus luridus Scop.
Phyllotreta undulata Kuts.
Chaetocnema concinna Marsh.
Cassida rubiginosa Mellié.
Pyrochroa serraticornis Sp.
Anaspis regimbarti Schul.
A. frontalis L.
A. maculata A. Fourc.
Rhynchites betulae L.
Apion pallipes Kirby.
A. nigricans Herbst.
Tropiphorus tomentosus Marsh.
Strophosomus melanogrammus Fourc.
Otiorrhynchus singularis L.
Polydrosus mollis Stroem.
P. tereticollis De G.
Phyllubius oblongus L.
P. calcaratus F.
P. urticae De G.
P. pyri L.
P. argentatus L.
P. pomonae OL.
Liosoma deflexum Panz.
Stenocarus fuliginos Marsh.
Cidnorrhinus 4-maculatus L.

Diptera were not very plentiful, a single *Chrysops*, probably *cæcutiens* or *relicta*, was seen but not caught, a few specimens of *Tipula vernalis* Mg. were present, and in one corner *Pachyrrhina maculata* Mg. was plentiful. By searching amongst the wild Garlic *Chilosia maculata* Fln. was found, and in one clump of the Greater Bellflower the Gall-fly, *Platyparea discoidea* F., was found to be present.

Mycology.—Mr. W. G. Bramley writes: In spite of all the rain most of the ground worked was rather on the dry side, except, of course, in the bottom of the dale. Plant pests were not abundant, even the commoner ones. The writer did not see any sign of *Puccinia fusca* but Miss Rob brought in specimens and said the rust was abundant. *P. primulae* was fairly common in the aecidial stage in somewhat restricted areas. The larger fungi were both scarce in numbers and species.

- Tricholoma gambosum* Fr.
Pholiota praecox (Pers) Fr.
P. mutabilis (Schaeff) Fr.
Pluteus cervinus (Schaeff) Fr.
Coprinus plicatilis (Curt) Fr.
Hygrophorus.
Fomes ferruginosus () Mas.
Dadælea quercina (Linn) Fr.
Erysiphe graminis D.C.
Peronospora schleideni Unjer.
Leptothyrium litigiosum (Desm.) Sacc.
Fuligo septica Gmel.

Uromyces valerianæ Fckl. O, I on *V. dioica*.
U. alchemillæ Lév. II on *A. vulgaris*.
U. rumicis Wint. II, III on *Rumex* sp.
U. poæ Rab. O, I on *R. ficaria*.

Puccinia primulae Duby I, II on *P. vulgaris*.
P. obtegens Tul. O, II on *C. arvense*.
P. cirsii Lasch. II on *C. lanceolatum*.
P. major Diet. O, I on *Crepis paludosa*.
P. hieracii Mart. O, II on *H. pilosella*.
P. violae DC. O, I on *V. riviniana*.
P. pruni-spinosa Pers. O, I on *Anemone*.
P. fusca Wint. III on *A. nemorosa*.
P. obscura Achroël. II on *Luzula campestris*.
P. caricis Reb. III on *C. paludosa*.
Phragmidium sanguisorbae Schroët. O, I, II, III on *Poterium sanguisorba*.
Ph. disciflorum James. O, I on *Rosa canina*.
Ustilago violacea Fckl. on *Lychnis diurna*.
Urocystis violae Fischer. on *V. riviniana*.

<i>Rhytisma acerinum</i> F. (ascomyces).	<i>Hypoxyton fuscum</i> (Pers.) Fr.
<i>Dasyscypha virginia</i> Fckl.	<i>Diatrype stigma</i> (Hoffm.) Fr.
<i>Mollisia cinerea</i> Karst.	<i>Diatrypella favacea</i> (Fr.) Cess and De Not.
<i>Xylaria hypoxyton</i> (Linn) Grev.	<i>Eutype flavo-virens</i> (Fr.) Tul.
<i>Eutype lata</i> .	<i>Leptosphaeria acuta</i> .
<i>E. scabrosa</i> (Bull.) Fckl.	

Mosses were not plentiful as the woodland floor had the appearance of more open country or hedgerow in its moss flora. A species so frequent in most woodlands as *Mnium hornum* L. had to be sought for, whilst a species like *Hylocomium loreum* B. & S. was widespread in its place. On clayey places *Catharinea undulata* W. & M. was plentiful, and a search on tree stumps only gave *Campylopus pyriformis* Brid. and *Dicranoweisia cirrata* Lindb. A few other species noted were *Thuidium tamarisceanum* B. & S., *Climacium dendroides* W. & M., *Hypnum molluscum* Hedw., *Eurhynchium striatum* B. & S., *Hylocomium squarrosus* B. & S., *Mnium undulatum* L., *Plagiothecium denticulatum* B. & S., and a very little *Trichostomum tortuosum* Dixon.

Mr. Percy Burnett writes: The visit to Douthwaite Dale provided good botanical fare, and with only one or two exceptions all the plants mentioned in the circular were recorded. In a typical 'dog's mercury' undergrowth *Paris quadrifolia* L. was plentiful, and *Actæa spicata* L. grew with *Rubus saxatilis* L. in the higher parts of the wood. *Ophrys muscifera* Huds. was frequently met with in clearings within the wood and also in the limestone quarries adjoining. Considerably more time than we were able to give could usefully have been spent at the quarries and the neighbouring fields, and in addition to the fly orchis my list includes *Orchis mascula* L., *O. Morio* L., *Habenaria virescens* Druce, *H. viridis* Br., and *Listera ovata* Br. Working along the top margin of the wood the following were noted: *Tamus communis* L., *Hypericum hirsutum* L., *Geum urbanum* L., *G. rivale* L.—and the intermediate hybrid was abundant—*Prunus padus* L., *Viburnum opulus* L., *Asperula odorata* L., *Campanula latifolia* L., *Epipactis latifolia* All., and *Ophioglossum vulgatum* L. Returning down the valley, a noticeable feature of the open fields nearer the stream was the extensive area dominated by *Scabiosa succisa* L., and *Anemone nemorosa* L., the last of which, a few weeks earlier, must have presented a picture. *Valeriana dioica* L., *Orchis maculata* L. and *Hydrocotyle vulgaris* L. occurred on the marshy ground. Climbing up the steep hillside to the quarries on the Hutton le Hole side we found *Atropa belladonna* L., *Cynoglossum officinale* L., *Verbascum thapsus* L., *Helianthemum chamaecistus* Mill., and *Erodium cicutarium* L'Her, and in the neighbourhood of the ford grew *Myrrhis odorata* Scop., *Lamium album* L., *Hesperis matronalis* L., and *Barbarea vulgaris* Br.

YORKSHIRE NATURALISTS AT BUBWITH

WE were favoured with a very fine day on June 26th at Bubwith, and the attendance of members was helped by a strong contingent from Hull. The Entomological Section had decided on this excursion for their annual field meeting, and, consequently, the insect men were numerous on this occasion. The Vicar of Ellerton had made arrangements with the farmers whose land we were working on, and at the meeting a vote of thanks to him for his help was moved by Mr. C. F. Procter. Our President, who was in the Chair at the meeting, writes :

Ecology (W. H. Pearsall) : The chief feature of ecological interest at Bubwith was the condition of the extensive alluvium laid down by the River Derwent. It was possible to see in some detail the development of this alluvial soil from reedswamp through various diverse stages. These stages are present only in fragmentary condition in the Plain of York, though evidently similar successions can be traced along the Ouse. Much of the alluvial soil in the lowlands must have developed along these lines. The soil is almost invariably mainly inorganic and it represents silts deposited by the river. The highest organic content (about 40 per cent.) occurs in occasional backwaters not seen near Bubwith. The soil effervesces strongly with acids and is strongly calcareous. The pH varies between 7 and 7.5 in the reedswamp stage and no signs of developing acidity were noted. It may be as high as pH 8.4 on old alluvia.

At Ellerton Ings extensive areas occur which are dominated by *Glyceria aquatica*, the characteristic reedswamp plant on calcareous, inorganic, and heavily silted habitats. Where the soil water level is just below the soil surface, *Glyceria* may have associated with it *Phalaris arundinacea*, *Carex gracilis*, and *C. Goodenowii* (and at Ellerton also what appeared to be a hybrid of these two species). All of these occur in great abundance mixed with *Glyceria*, not in separate societies. They mature, with other marsh plants, earlier than the *Glyceria*, and were all at about the same height in late June. Later *Glyceria* shades them. In this mixed reedswamp the following species were widely distributed, and either frequent (f), occasional (o), or local (l).

Equisetum limosum (f).
Heleocharis palustris (lf).
Glyceria fluitans (f).
Carex vesicaria (f).
Enanthe fistulosa (f).
Æ. Lachenalii (o).
Æ. Phellandrium (o).
Sium latifolium (o).
Senecio aquaticus (o).
Polygonum amphibium (o).
Thalictrum flavum (o).
Ranunculus repens (f).
R. flammula (o).

Caltha palustris (f).
Spiræa Ulmaria (o).
Nasturtium amphibium (f).
N. sylvestris (o).
Stellaria glauca (o).
S. aquatica (l).
Galium palustre (f).
Pedicularis palustris (o).
Myosotis scorpiodes (f).
Iris pseudacorus (o).
Veronica Beccabunga (o).
V. scutellata (l).

In drier places *Glyceria aquatica* tends to get sparse, and *Ranunculus repens* is often noticeably abundant along with *Poa trivialis*, *Carex disticha*, *C. hirta*, *Alopecurus pratensis*, *Deschampsia cæspitosa*, *Juncus inflexus*, and *Galium aparine*.

The interest of this community lies in its striking resemblance to the less organic parts of the Yare Valley fen briefly described in *Types of British Vegetation*. It is evident that this community is a characteristic one of inorganic calcareous alluvia, and though little of it now remains in Yorkshire, the frequent fragments of it found along the rivers show that it was once widely spread, until drainage operations limited its

range. Under purely natural conditions, the reedswamp gave way to woods of willows (*Salix fragilis* and *alba*) and alders, fragments of which are still to be found developing in old backwaters and oxbows. These possess a similar group of ground flora plants to those present in the reedswamp. The final stage in development is an oak-ash woodland, often with *Brachypodium sylvaticum* and *Mercurialis* as chief members of the ground flora. In examples, east of Wetherby, the soil is still inorganic and may be distinctly alkaline (pH 8.0), and it seems clear that during development this succession is continually silted until the summer water level is well below the surface. This, coupled with a high rate of decay of organic matter, keeps down the organic content of the soil.

The water level is known to be 3 or 4 ft. above the Ings in winter. The oak-ash wood level probably represents the limit of flooding.

On the Ellerton Ings the marsh is grazed in the more accessible parts. The plant most rapidly removed by grazing is *Glyceria aquatica*, though the herbaceous species also suffer severely. In one large grazed area, evidently deeply flooded in winter, *Glyceria fluitans* had become the dominant plant, almost the only associates being rather occasional plants of *Alopecurus geniculatus*, *Ranunculus flammula*, and *Polygonum amphibium*.

In the dried parts of the grazed marshes *Poa trivialis* is perhaps most abundant, but variations in the composition of these marshy grasslands vary so much with the amount of grazing that any general description is difficult.

Lastly, the water plants seen are also characteristic of calcareous and silted waters. This list is collected from the river, oxbow and other ponds and drains. Again it compares very definitely with the Yare Valley description. *Potamogeton pectinatus* (R. Derwent), *P. lucens*, *P. crispus*, *P. natans*, *Myriophyllum verticillatum*, *Ceratophyllum demersum*, *Elodra canadensis*, *Enteromorpha* sp., *Ranunculus peltatus*, *Callitriche stagnalis*, *Lemna minor*, *L. trisulca*, *Hippuris vulgaris*. Yellow water lilies were seen higher up the Derwent.

Flowering Plants (W. A. Sledge) : The vegetation of the low-lying Ings bordering the Derwent between Bubwith and Aughton is rich in marsh plants. Of the many interesting species seen, no less than nine are unrecorded for the Derwentland Area in Robinson's *Flora*. Two of these species, viz., *Juncus compressus* and *Carex pallescens*, are not listed at all by Robinson for the East Riding, though both have been found since the publication of the *Flora*. The credit for the additional records for these two plants, which are evidently very restricted in their distribution in East Yorkshire, is due to Miss C. M. Rob. She also collected a sedge near to *C. vulpina* but differing in its interrupted inflorescence and long leaf-like lower bracts, which suggested *C. axillaris* (*C. vulpina* × *remota*). On revisiting the locality we found both of the supposed parents growing near by, but further study of this plant leaves me in no doubt that it is *C. vulpina* var. *nemorosa* Lej., an interesting form which simulates *C. axillaris* but differs in its less compound lower spikes and in its fruits which are identical with those of *C. vulpina*. Dr. Pearsall and the writer also saw some puzzling forms of *C. gracilis* and *C. Goodenowii*, both of which are plentiful on Aughton Ings. The species displayed considerable variation here, and it seems likely that some of the plants seen were of hybrid origin. Other notable marsh species seen at Aughton include *Thalictrum flavum*, *Nasturtium amphibium*, *N. sylvestre*, *Stellaria aquatica*, *Sium latifolium*, *Enanthe Lachenalii*, and *C. aquatica*. *Bromus commutatus* and *Hordeum nodosum* were plentiful on the banks of the Derwent and elsewhere between Aughton and Bubwith, and *Medicago arabica* was seen by the roadside at Aughton and, later on, at

Elvington. In the following list an asterisk denotes those species which are not given for Derwentland in the *East Riding Flora*.

- | | |
|--|--|
| <i>Thalictrum flavum</i> L. | <i>Scutellaria galericulata</i> L. |
| <i>Nasturtium officinale</i> R. Br. | * <i>Atriplex hastata</i> L. |
| <i>N. sylvestre</i> R. Br. | <i>Ceratophyllum demersum</i> L. |
| <i>N. palustre</i> DC. | <i>Epipactis latifolia</i> Sw. |
| <i>N. amphibium</i> R. Br. | * <i>Juncus compressus</i> Jacq. |
| * <i>Stellaria glauca</i> With. | <i>Potamogeton natans</i> L. |
| <i>S. graminea</i> L. | <i>P. lucens</i> L. |
| * <i>S. aquatica</i> Scop. | <i>P. pectinatus</i> L. |
| * <i>Medicago arabica</i> Huds. | <i>Carex disticha</i> Huds. |
| <i>Poterium officinale</i> H. Gray. | * <i>C. vulpina</i> L. var. <i>nemorosa</i> Lej. |
| <i>Hippuris vulgaris</i> L. | <i>C. remota</i> L. |
| <i>Callitriche stagnalis</i> Scop. | <i>C. gracilis</i> Curt. |
| <i>C. stagnalis</i> Scop. var. <i>platycarpa</i> | <i>C. Goodenowii</i> Gay. |
| Kuetz. | * <i>C. pallescens</i> L. |
| * <i>Apium inundatum</i> Reichb. fil. | <i>C. hirta</i> L. |
| <i>Sium latifolium</i> L. | <i>C. vesicaria</i> L. |
| <i>Enanthe fistulosa</i> L. | <i>Phalaris arundinacea</i> L. |
| (<i>E. Lachenalii</i> C. Gmel. | <i>Alopecurus geniculatus</i> L. |
| <i>E. aquatica</i> Poir. | <i>Glyceria fluitans</i> L. |
| <i>Silans flavescens</i> Bernh. | <i>G. aquatica</i> Wahlb. (heavily |
| <i>Galium palustre</i> L. | smutted with <i>Ustilago longissima</i>) |
| <i>Lysimachia vulgaris</i> L. | * <i>Bromus commutatus</i> Schrab. |
| <i>Scrophularia aquatica</i> L. | * <i>Hordeum nodosum</i> L. |
| <i>Pedicularis palustris</i> L. | |

Entomology (John R. Dibb) : Insects generally were not in large numbers, at least as regards the non-aquatic species with which the writer was concerned, the investigation of the aquatic insects being left in the energetic hands of Mr. T. Stainforth. The sweeping net and fly net were used for four and one hours respectively with the result of a total of one hundred captures only.

The slowness of collecting resulted in Mr. John Wood and the writer early in the day getting left behind the main party, and our day was spent between Bubwith and Aughton on low-lying land near the River Derwent. The flooding of this ground for long periods in the winter may have some significance in regard to the present scarcity of insect life.

Weather conditions were perfect and the ground looked tempting. There were quantities of bog and heath vegetation usually very productive in sweeping ; results, however, were disappointing.

In Coleoptera *Corymbites nigricornis* Panz. was almost the only beetle we hoped to get which was present but fortunately two good captures, *Ceuthorhynchus quadridens* Panz. and *Cantharis lateralis* L., not, to my knowledge, previously associated with this area, were taken.

Diptera were particularly disappointing in the *Syrphidae* but good in the *Dolichopidae* of which the handsome *Poecilobothrus nobilitatus* L. was present in numbers.

Some attention was given to the Hymenopterous families *Ichneumonidae* and *Tenthredinidae*, but the former were badly represented and of the latter we are only able to include three of the species taken, in the present list.

The following is the list of captures with the exception of some parasitic Hymenoptera not yet verified :—

NEUROPTERA

Panorpa communis L. *Chrysopa perla* L.

HYMENOPTERA (TENTHREDINIDAE)

Selandria serva F. *Tenthredella olivacea* Htg.

Tenthredella livida L.

DIPTERA

<i>Chloromyia formosa</i> Scop.	<i>Tetanocera punctata</i> F.
<i>Microchrysa flavicornis</i> Mg.	<i>Empis trigramma</i> Mg.
<i>Hæmatopota pluvialis</i> L.	<i>Symphoromyia crassicornis</i> Panz.
<i>Chilosia albitarsis</i> Mg.	<i>Pæcilobothrus nobilitatus</i> L.
<i>Melanostoma scalare</i> F.	

COLEOPTERA

<i>Bembidion biguttatum</i> F.	<i>Phædon cochleariæ</i> F.
<i>Acupalpus luridus</i> Dej.	<i>Galerucella sagittariæ</i> Gyll.
<i>Aleochara lanuginosa</i> Grav.	<i>Cassida viridis</i> L.
<i>Stenus tarsalis</i> Ljun.	<i>Pyrochroa serraticornis</i> Scop.
<i>Tachyporus obtusus</i> L.	<i>Corymbites nigricornis</i> Panz.
<i>Tachinus rufipes</i> DeG.	<i>Agriotes pallidulus</i> Ill.
<i>Xantholinus punctulatus</i> Payk.	<i>Otiorrhynchus singularis</i> L.
<i>Cercyon hæmorrhoidalis</i> F.	<i>Ceuthorhynchus floralis</i> Payk.
<i>Agabus bipustulatus</i> L.	<i>C. quadridens</i> Panz.
<i>Aphodius fossor</i> L.	<i>Phytonomus adspersus</i> F.
<i>Cantharis lateralis</i> L.	<i>Sitona humeralis</i> Steph.
<i>Clytus arietis</i> L.	<i>Phyllobius calcaratus</i> F.

To the above your Secretary adds that Mr. J. Woods caught *Tipu nigra* L. fairly freely but the only other species seen was *T. fascipennis* Mg. Other similar types were *Limnophila ferruginea* Mg., *Ranphidia longirostris* Mg., *Pachyrrhina maculata* Mg., *Erioptera fuscipennis* Mg. and *Ptychoptera contaminata* L. Among the Hover flies the large *Volucella pellucens* L. was plentiful in one spot and others were *Eristalis pertinax* Scop., *E. intricarius* L., *E. arbustorum* L., *Helophilus pendulus* L., *H. hybridus* Lw., *Platychirus peltatus* Mg., *Syritta pipiens* L., *Liogaster splendida* Mg., and *Chrysogaster hirtella* Lw. The dolichopod *Pæcilobothrus nobilitatus* L., was seen to be widely distributed and others were *Dolichopus plumipes* Scop., *Sympycnus annulipes* Mg., *Syntormon pallipes* Fab. and an addition to the Yorkshire list in *Porphyrrops micans* Mg. Among the biting flies were *Hæmatopota pluvialis* L. and *Culicella morsitans* Theo. Another interesting fly with spotted wings, *Melieria crassipennis* F., was plentiful in one bed of reeds and two mud lovers complete the list, *Notiphila cinerea* Flm. and *Parhydra quadripunctata* Mg.

Lepidoptera (Mr. J. Hooper) says : As you will be aware, Barnes and I did not spend much time at Bubwith but went on to Skipwith Common. I took one moth at Bubwith viz. *T. amara*, the blood vein ; and the following were taken at Skipwith Common :—*O. plumbaria*, lead belle ; *T. amara*, blood vein ; *P. pruniata*, grass emerald ; *H. jacobææ*, the Cinnabar ; *E. atomaria*, common heath ; *E. mi*, Mother Shipton ; *D. sanio*, clouded buff ; *B. piniaria*, bordered white ; *A. sylvanus*, large skipper ; *T. tages*, dingy skipper ; *L. quercus*, oak egger (seen).

Mr. T. Stainforth supplies the following additional notes :

Coleoptera : The beetles obtained belonged mostly to common and generally distributed species. By sweeping and searching in the marshes were obtained :—

<i>Stenus pallitarsis</i> Steph.	<i>Bembidion dentellum</i>
<i>S. rogeri</i> Kr. (<i>providus</i> Br. Cat.)	(<i>flammulatum</i>)
<i>S. junio</i>	<i>B. ustulatum</i> (<i>litorale</i>)
<i>S. bupthalmus</i>	<i>Agriotes obscurus</i>
<i>Pterostichus niger</i>	<i>Malthodes dispar</i>
<i>P. vulgaris</i>	<i>Malachius bipustulatus</i>
<i>Pseudophonus</i> (<i>Harpalus</i>) <i>pubescens</i>	<i>Cantharis livida</i>
<i>Amara plebeia</i>	<i>C. rufa</i>
<i>Anchomenus dorsalis</i>	<i>C. nigricans</i>
<i>Calathus fuscipes</i> (<i>cisteloides</i>)	<i>Rhagonycha limbata</i>
<i>Asaphidion flavipes</i>	<i>Phædon armoraciæ</i>

*Prasocuris phellandrii**Lema lichenis**Galerucella nymphaea* L.*Anaspis ruficollis**A. maculata**Olibrus æneus**Byturus tomentosus*

Aquatic beetles obtained were :

*Hydroporus palustris**Colymbetes fuscus**Ilybius ater**Agabus bipustulatus**A. chalconotus*

Near the plantation at Aughton the three longhorns, *Clytus arietis*, *Grammoptera ruficornis*, and *Leptura maculata* (*Strangalia armata*) were not uncommon on the flowers of Umbelliferæ.

DRAGONFLIES (*Odonata*).—Near the Bubwith Bridge over the Derwent the Banded Demoiselle Dragonfly (*Calopteryx splendens*) Harris was to be seen commonly either flying about or at rest on the reeds. *Ischnura elegans* and *Agrion puella* were abundant near the streams and ditches throughout the marshy area investigated.

Lepidoptera : Caterpillars of the Orange Tip Butterfly were found on Garden Rocket in the village, and of the Small Tortoiseshell commonly on Stinging Nettle in several places in the district. Butterflies noted were Small Heath, Meadow Brown, Green-veined White, and Large Skipper.

Conchology (Mrs. E. M. Morehouse) writes : Quite the most interesting feature of the Bubwith excursion was the old bath which had been removed from a bathroom and which evidently served as a trough in the second field visited before lunch. Besides the molluscs found it contained quite a good variety of aquatic plants and freshwater life including *Asellus aquaticus*, several beetles, mites, beetle larvæ, etc. The first six dips yielded one different species on each occasion : two *Planorbis*, two *Limnaea*, one *Bithynia*, one *Physa*. It must be an unique record. The bath made a marvellous aquarium and appeared so well balanced ; one of the great difficulties of the indoor aquarium.

The following list of molluscs were noted in the River Derwent and the flooded land adjacent :

Planorbis contortus* LinnéP. carneus* Linné*P. vortex* Linné*Limnaea stagnalis* Linné**L. palustris* Müller**L. pereger* Müller**Bithynia tentaculata* Linné**Physa fontinalis* Linné*Sphaerium corneum* Linné*Vivipara vivipara* Linné*Neritina fluviatilis* Linné

* Also found in the bath.

Ornithology : Messrs. C. F. Procter and C. W. Mason write : The Vertebrate Section were fortunate in being able by virtue of a carefully-selected survey and good luck in the weather, to make what we believe to be a comprehensive notice of the birds, as per the list below. The time of the year coincided with the eclipse period when most of the waders which frequent this area had completed their parental duties, and had either taken or were about to take their departure. The season had been an early one, and birds like the Green Plover were already in numerous flocks, which is a sure indication that their first efforts had not required duplicating. Three weeks or a month earlier would have seen birds like the Redshanks, Snipe, and the visiting Herons in much larger numbers, although they were well represented as it was.

In addition to the common and constant types of Finches and smaller birds, the observed list was as under : Heron, Redshank, Snipe, Sandpiper, Black-headed Gull, Waterhen, Cuckoo, Tawny Owl, Pied, Yellow, and Grey Wagtail (at least one family party of the Yellow), Carrion Crow, Rook, Jackdaw, Magpie, Jay, Green Plover, Black-headed Bunting, Wood Wren, Willow Wren, Swift, Great Tit, Chiff-chaff, White-throat, Reed Bunting.

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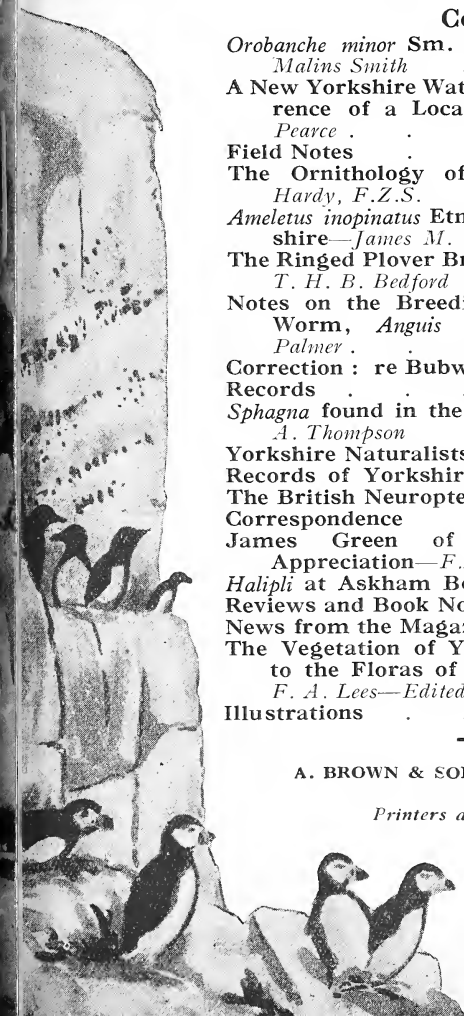
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YORKSHIRE NATURALISTS' UNION.

Y.N.U. CONCHOLOGICAL SECTION

THE autumn excursion of the Y.N.U. Conchological Section is a joint one with the Yorkshire Conchological Society and the York and District Field Naturalists' Society.

The meeting is at Bramham Cross Roads at 3 p.m. on September 4th. The leader is Mr. H. J. Armstrong, of the Conchological Society.

E. DEARING,
Hon. Secretary.

FRESH-WATER BIOLOGY COMMITTEE

THE Annual Meeting to consider the Annual Report and to nominate officers and committee for the ensuing year will be held in the Geological Department of the University of Leeds, Hillary Place, on Saturday, October 2nd, at 3-30 p.m.

CHRIS. A. CHEETHAM,
Hon. Secretary, Y.N.U.

GEOLOGICAL SECTION

THE Annual Meeting to nominate officers and committees for the coming year and to consider the reports will be held at Leeds in the Geological Department of the University, Hillary Place, on October 2nd, at 2-30 p.m.

CHRIS. A. CHEETHAM,
Hon. Secretary, Y.N.U.

MYCOLOGICAL COMMITTEE

THE Annual Fungus Foray will be held at Pocklington from September 4th to 8th.

Headquarters.—The Buck Hotel, Pocklington. Proprietor: Mr. S. Lumley.

Permission.—Permission has been obtained to visit the following areas—Millington, Allertorpe Common and Warter Priory.

Meetings.—The Annual Meeting will be held on Saturday evening, when Mr. R. C. Fowler Jones will deliver his Presidential Address on 'Some Reminiscences of my Fungus Forays.' The following have also promised papers, Mr. T. Petch on 'Hypoxylon and Related Genera,' and Mr. W. G. Bramley on 'Rusts.'

The Secretary apologises for the delay in the notice, but due to it being impossible to obtain permission or accommodation at the places selected last year, some difficulty has been encountered in finding a suitable place.

GEORGE F. SHEARD, *Convener.*

OROBANCHE MINOR SM. IN SHIPLEY

A. MALINS SMITH

ON July 1st of this year I found this plant on the site of a disused brickworks at Redburn Road, Shipley. The soil was mainly clinker and bits of brick, by-products of former activity of the brickworks. It has gradually been colonised



Fig. 1. A clump of *Orobanche minor* Sm. from the Shipley site.

by plants and for some years the two chief plants have been Meadow Clover and Wall Hawkweed. As the site is near my house and close by a much-frequented path, I have walked by the spot on an average at least once a week during the past 17 years. I have good evidence therefore that this is the first appearance of the plant, for at the beginning of the period the brickworks were still in regular activity. This part of the site was already a dump-heap for clinker, but it was still almost uncolonised by vegetation. It may be stated with confidence therefore that this is the first appearance of the Lesser Broomrape on this spot. *Lees' West Riding Flora*

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Fig. II. *Orobanche minor* and Red Clover, showing the connection between the roots.

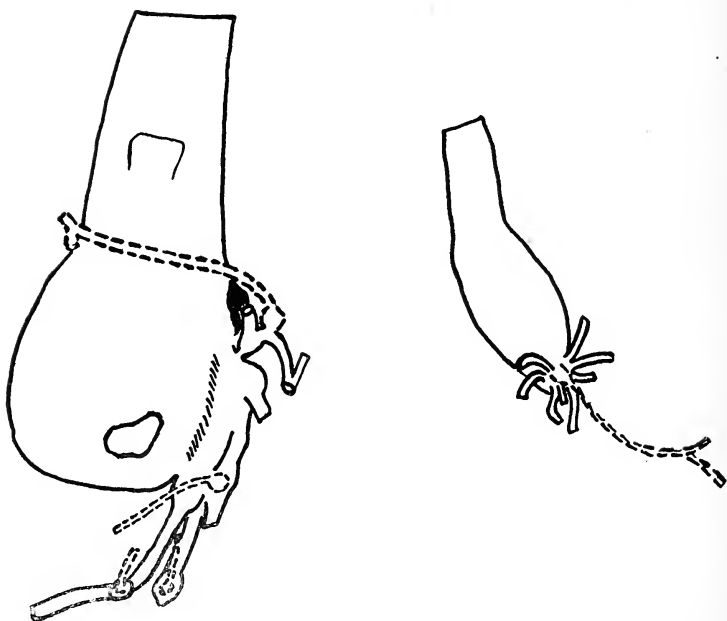


Fig. III.

Left—Tubercle of *Orobanche minor* showing four attachments to Red Clover roots outside the tubercle.
 Right Tubercle showing one Clover root attached to the base. Dotted lines show Clover roots.

describes this plant as very rare and gives only five records, three in the neighbourhood of Ripon, one at Collingham, near Wetherby, and one at Malham, quoted from W. Howson's flora (1850). The nearest of these places is Collingham, 16 miles north-east of Shipley. At the present station on July 1st, there were 65 flowering stems, a number which increased to about 100 during the month. All were included within an area of 3 yards by 3 yards. The plant is parasitic on ordinary Red or Meadow Clover and the connection between the root-systems is illustrated in Fig. II.

Tate in his paper on the anatomy of *O. hederæ* Duby. in *New Phytologist* XXIV, 5, says of the roots of that species, 'They are short, tapering, fleshy processes developed from the tubercle. In no case were they observed to form secondary connections with the host, as several authors have stated to be the case.' In the present specimens of *O. minor*, on the other hand, there was a considerable development of thickish roots from the base of the tubercle and these made frequent secondary connections with the host. This is illustrated in Fig. III. The roots were distinguishable from those of the clover by abundant reddish-brown pigment which contrasted with the white clover roots. These latter were often considerably swollen at the region of union with the root of the parasite.

The sudden appearance of so many plants of this Broomrape in a new station is a surprising and puzzling occurrence. Tate states that in the Ivy Broomrape, seeds germinate and pass at least one year entirely subterraneously before flowering. They flower from May to September of the second year. If this occurs in the Lesser Broomrape we may picture a large number of its seeds beginning to germinate in this Shipley station in the early summer of 1938. When and how the seeds came and whether they had remained dormant for any period must be a matter for speculation. The Red Clover was not the product of seeds artificially sown, but a natural colonisation by the wild plant. The nearest localities are separated by a very long distance for wind-blown seeds (16 miles), and moreover, all the records are old and in the case of a plant so rare in the West Riding it is probable that there are no plants growing in those localities now. The Permian localities are in the exact opposite direction to the prevailing winds and it would be unlikely in any case that wind-blown small seeds would fall in such large numbers on one restricted spot. Whatever may have been the method of arrival the occurrence is one of very great interest and the future of these plants in this station will be closely watched.

Fig. I is a photograph of a sod, including Clover and *Orobanche*.

A NEW YORKSHIRE WATER-BEETLE, AND THE REOCCURRENCE OF A LOCAL WATER-BUG

REV. E. J. PEARCE

I TOOK a single specimen of *Haliplus heydeni* Weh. on June 21st last, in the River Derwent close to Malton railway station, South-east Yorkshire. Dr. Fordham kindly informs me that this is a new record for the County (and Vice-County). *Heydeni* is usually found in small grassy ponds, but I have several other instances of the occurrence of this species—hitherto always singly—in rivers. At the same time I took six specimens of the local water-bug *Aphelauchris montondoni* Horv. The latter, I am informed by Dr. Fordham, has been taken on the Nottinghamshire side of a stream between Yorkshire and Nottinghamshire. It is satisfactory to be able to report its having been found well within the County.

I should like to point out a misprint that occurred in my note on p. 141 in the June, 1936 *Naturalist*, on 'Yorkshire Haliplid Records,' as it might be misleading. *H. lineolatus* Mann. was misprinted as *lineslatus*.

FIELD NOTES

Elephant Hawk Moth in Bradford.—A live specimen in good condition of the Elephant Hawk Moth (*Eumorphia Elpenor*) was brought to me on July 1st, 1937, by a railwayman Mr. John Holgate, of Thackley. He had found it basking in the sunshine on a railway sleeper at Thackley, Bradford. This I believe is a new record for our district.—C. P. GLEDHILL, KIRK DRIVE, BAILDON.

Skua Gull in Upper Wharfedale.—In my annual ornithological report for the West Riding, for 1932, I noted that it had been reported that in the last week of September a Pomatorhine Skua had been picked up in a dying condition at Appletreewick (*Naturalist*, 1933, p. 21). By the description in the newspaper I expressed doubt if it were a Skua at all. This bird was preserved for the Craven Museum at Skipton, where, until recently, I have not had the opportunity of seeing it. It is certainly a Skua in its first year's plumage: but whether it is a Pomatorhine (*Stercorarius pomarinus* T.) or an Arctic (*S. parasiticus* L.) I am unable to say, but probably the latter. It is in a very small case and the ends of its tail feathers are very badly frayed.—H. B. BOOTH.

Puffin inland in July.—A young Puffin, a bird of the year, was found on the last day of July, at Old Scriven, near Knaresborough. The probability is that it had lost its way and wandered from the Flamborough headland, during the foggy weather which prevailed about that time. It had come to ground, damaged by flying against the overhead wires.—RILEY FORTUNE, HARROGATE.

THE ORNITHOLOGY OF MERSEYSIDE, 1936

ERIC HARDY, F.Z.S.

THESE notes are the outcome of organised bird-watching in the Merseyside area, chiefly by the Ornithological Section of the Liverpool Naturalists' Field Club. A more detailed report appears annually in the *Proceedings of the L.N.F.C.* It is hoped to have each section surveyed and written up by the regional referee, in order when funds permit to publish a guide to Merseyside Ornithology which has long been necessary as an accompaniment to the various volumes on the Flora of Liverpool. The main regional referees, all experienced watchers with many years experience of the areas, are as follows: Dee Estuary, Messrs. W. Wilson and W. Griffiths; mid-Wirral, Miss M. Henderson; Bidston-Wallasey, G. E. Barker; Liverpool Sewage Farm, W. L. French and Eric Hardy; Liverpool City Parks, Eric Hardy; Lord Sefton's Estate, W. L. French and Eric Hardy; Knowsley Park and Lord Salisbury's Estate, Eric Hardy; Aughton and Sefton, Miss N. Medcalf; Freshfield, Mr. L. Grandy. There are however well over a hundred members, so that many areas are constantly covered and reported on; many of the uncommon birds in the following list were reported to, and subsequently watched by, numerous members—sometimes a special field meeting—for authenticity, and as far as funds permit, a detailed account of the avi-fauna of the year, month by month, and any statistics as bird counts over special areas, surveys taken in conjunction with the British Trust for Ornithology, etc., are given in the annual *Proceedings of the L.N.F.C.* The following list of 1936 birds is given in convenient form, sub-species being given only where generally accepted as of importance. I must acknowledge a great deal of help from my wife up to her sad death in December; naturalists who had met her in many parts of the country knew how much she helped my field work but declined any publicity.

CARRION CROW.—Increasing winter visitor to Knowsley Park and Lancashire and odd birds in summer in Wirral. I saw and heard one at East Wavertree Allotments, Liverpool, February 15th.

ROOK.—For some years I have seen and recorded a piebald rook in Wirral and near Liverpool (where Wirral rooks regularly flight to feed in winter), and at the International Sheepdog Trials in Wavertree Playground, August 13th, Mr. W. L. French pointed the bird out to me in a flock of rooks there. Owing to tree felling, Shotwick rookery in Wirral was not occupied, while Gateacre rookery, near Liverpool, extinct since 1933, was reoccupied and three nests built

and used. Local rookery counts: Woolton Wood, 196; West Derby, 154; Freshfield, 11; Aigburth, 8; Dovecot, 33; Reynold's Park, 12; Woolton Road, Wavertree, 2; Springwood, 4; Aughton Rectory, 60; the latter a big increase, reports Miss Medcalf.

GOLDFINCH.—We watched a female at Capenhurst, Wirral, April 25th.

SISKIN.—I watched small flocks with lesser redpolls and tits in Knowsley Park, Dock Plantations, December 12th, and next day Mr. G. Rodinson saw many at the Loggerheads, North Wales. Evidently an unusual immigration judging from other reports from Delamere and the Welsh woods by the Dee.

LESSER REDPOLL.—Specially noted in connection with the British Trust for Ornithology Survey. An increasing nester in this area in recent years; many nested this year in Knowsley Park, Kirkby and Simmonswood Mosses, the rough land around Rufford, Formby-Ainsdale pine-woods, Haddon Wood in Wirral, Childwall Black Wood. They are especially numerous in those districts where birch is fast following bracken over old heathland. It is most numerous in these districts in the breeding season but becomes fairly general in winter, visiting city parks in hard weather in company with small birds. In August Miss N. Medcalf had several scores invade her garden to feed on the ripe birch catkins. I have not noted it in city gardens or the Liverpool Cathedral Bird Sanctuary (in slumland), but in winter it commonly visits bird tables in rural gardens. Birch is so common here that I have found it in all woods where the lesser redpoll nests, but I have also seen the bird feeding in alder, oak, and beech woods: the Ainsdale pinewoods, whose edges they frequent, are a problem of choice, for there are large tracts of birch here, especially below Freshfield Station.

CROSSBILL.—There were many in the Freshfield-Ainsdale pine-woods, winter 1935-6, but although the estate office gave me a long-standing permit to study there, I found no proof of their nesting, nor, I understand, did collectors.

LINNET.—Mr. White reported a white one from Prescott in October.

SNOW BUNTING.—I saw a flock of five on the Bradley side of Bolton, December 7th, following frost and snow.

GREY WAGTAIL.—Also covered in B.T.O. Survey. It is a regular winter visitor and winter resident at Liverpool Sewage Farm and along the local coast, often visiting city parks' streams and local waters, but no proof of its nesting or in summer. Usually comes September and leaves March at Sewage Farm. At Aughton inland on the Lancashire plain, Miss Medcalf reports it seen rarely in winter with

records for December to March and one September record. I have seen it within a few yards of houses but never away from water or flooded fields. Like other wagtails, it is very fond of the 'sprinklers' now increasingly used on sewage farms to get rid of excess sewage. Unlike pied wagtail, it is not seen far from water, on town lawns.

YELLOW WAGTAIL.—I saw a late one, Liverpool Sewage Farm, November 28th, after a long fog spell.

PIED WAGTAIL.—I watched one making full courtship display before female at Childwall in a mild spell late October. I watched a specimen all white save for a few dark feathers on underparts on the Liverpool Sewage Farm for two months during autumn; I showed it to Mr. W. French who later showed it to J. W. Cutmore, N. F. Ellison, and other naturalists.

WHITE WAGTAIL.—Mr. W. French saw four with two peds, Liverpool Sewage Farm, March 20th.

ROCK PIPIT.—I found three pairs nesting in the stone embankment of the Ship Canal, between Eastham locks and Manisty, May 24th, and was able to show them to some of the L.N.F.C. present (see *British Birds*, June).

WATER PIPIT.—I saw what I presumed to be this species at Liverpool Sewage Farm, January 25th. The bird much resembled a rock pipit with white on the edges of the tail and at first I thought it might be a Scandinavian rock pipit until I was able to refer my notes to the species. The water pipit has not before been recorded in the area.

SONG THRUSH.—I saw many of the paler-grey Continental forms feeding with ordinary specimens, redwings and black-birds in the shrubberies, Sefton Park, during hard frost, January 12th.

MISTLE THRUSH.—Mr. White (L.N.F.C.) watched one bird frequently singing on the wing from perch to perch at Huyton, early May, the first record we have of such a habit from a reliable observer.

BLACKBIRD.—A cock with the upper mandible curved over the lower in a parrot-like manner was hatched in Sefton Park and I often saw it and fed it until it disappeared in the summer. For two years a pied hen has visited my garden in East Wavertree.

WHEATEAR.—Mr. G. A. Tyrrell reported a big passage of Greenland wheatears in mid-Wirral the first week of May.

STONECHAT.—Birds from Kirkby-Simmonswood mosslands winter every year on Liverpool Sewage Farm. Mr. L. Grandy reported them in the mild mid-winter, 1936-7 from Freshfield.

REDWING.—During the hard frost of January, abundant in Liverpool Cathedral Bird Sanctuary, in the midst of city slums; I counted 46 there, January 15th. In Sefton Park

one was tamed to take food from the hand, and remained until May. During the spring and summer a male summered in the Nightcap Wood in Knowsley Park. I could not find any nest or female, but saw and heard the male singing in May and June. His song, which I heard before I saw him and was attracted by its unusualness, had a quieter and more extensive range of notes than the song thrush, an abundant song at the time.

REDSTART.—I saw one Charley Wood, Kirkby Moss, August 8th, on migration. This is a scarce migrant with us, and in eight years' observation at Aughton, Miss Medcalf has but two records.

GRASSHOPPER WARBLER.—Mr. G. A. Tyrrell found a pair nesting near Devon's Doorway, Gayton, Wirral, and Mr. P. N. Williams a bird singing regularly at Ince, Wirral.

WILLOW WARBLER.—Mr. J. S. Taylor (L.N.F.C.) worked out the fledgling period at Sniggery Wood, Blundellsands, to 13½ days. On October 22nd I saw a late one in my garden in East Wavertree.

BLACKCAP.—Miss N. Medcalf reported one for the first time in the Aughton district, May 10th and 17th. I saw one in Shotwick Wood, April 3rd, but it was not singing.

GOLDCREST.—Mr. G. Rodinson reported large numbers in Delamere Forest, November 30th, possibly a migration.

STARLING.—All the winter visitors had left Liverpool Cathedral Bird Sanctuary in the city, and only the nesting birds left, by April 18th.

COLE TIT.—During hard spell of frost, on February 18th, an unemployed friend with whom I have tamed wild birds to feed from the hand for years, watched one in Sefton Park burying food he had given it and later raking it up with its beak.

NUTHATCH.—We watched one, Shotwick Dale, April 25th, and showed it to a meeting of the L.N.F.C. ; Miss M. Tunnicliffe and Mr. G. Parkin saw one in Otterspool Park, Liverpool, late September. The species is scarce here.

SPOTTED FLYCATCHER.—I recorded our first visitor to the Liverpool Cathedral Bird Sanctuary, May 27th.

SWALLOW.—I saw a piebald specimen, Liverpool Sewage Farm, September 5th. Mr. G. Rodinson returns the latest report, from Bender Lane, Bidston, November 1st.

GREAT SPOTTED WOODPECKER.—I found two pairs nested in Childwall Woods, now a built-up part of Liverpool 15. Mr. French reported a pair nested in Charley Wood, Kirkby.

SWIFT.—On June 6th, I counted 382 winnowing over the big lake in Knowsley Park, an obvious migration compared to counts before and after ; the same week I saw unusually large numbers over Carr Mill Dam, St. Helens.

(To be continued)

AMELETUS INOPINATUS ETN. IN YORKSHIRE AND DERBYSHIRE

JAMES M. BROWN, B.Sc., F.R.E.S.

UNTIL very recently the Mayfly *Ameletus inopinatus* Etn. was known in Britain from only two or three records of individuals taken in the highlands of Scotland, and from one record for England, Dr. K. G. Blair having captured a specimen at Brothers Water, Westmorland, 20/6/29 (*E.M.M.*, 1929, p. 182). It is commonly regarded as one of our rarest Mayflies.

My first capture was that of a male taken at Malham, Yorkshire (V.C. 64), 14/6/31 (*E.M.M.*, 1935, p. 261), while more recently I took a female in Bradford Dale, Youlgreave (Derbyshire), 24/5/35. Since finding my first imago I have taken every opportunity of searching likely streams for the nymphs, which so far as I know, had not been identified in this country at all.

My earliest success came on the examination of some Mayfly nymphs which I had collected in streams at Selside (Horton-in-Ribblesdale), 23/4/35, and on the Buttertubs Pass (Hawes), 27/4/35. In both cases among the specimens were nymphs which I recognised as those of *Ameletus*. A visit to Malham later in the year enabled me to collect in the River Aire, where I had previously obtained the adult fly. Here again I was successful in obtaining a number of nymphs of this species (2/7/35), but it was evidently too late in the season for the fly. More recently still, during the visit of the Y.N.U. to Keld, among specimens taken from the upper region of the River Swale by Mr. Allen and by myself (15/5/37), I again detected nymphs of *Ameletus* (*Naturalist*, 1937, p. 162). Further, one of these emerged as a subimago shortly after capture, and Mr. Whitehead was fortunate in securing a second subimago by the river side. On my way home from Keld, a short time was spent at the Buttertubs stream, again successfully, but owing to a thunderstorm it was impossible to collect at Selside as intended. Mr. Cheetham, however, very obligingly returned next day, obtained some material from the stream which he sent on to me, among which I again recognised *Ameletus* nymphs, and one of these had partially emerged as a subimago.

The nymph of *Ameletus* is quite characteristic, and though superficially rather like a *Baetis*, with rather similar tracheal gills, is not easily confused with that type. It occurs on and under stones, mainly in cold upland streams, and appears less active in escaping than does a *Baetis*, frequently remaining clinging to the upturned stone, while most Mayfly nymphs

readily slip away. It differs from the nymph of *Baetis*, not only in the markings on the body, legs and filaments, but in the shorter length of the antennae, the characteristic shape of the face, the pointed posterior angles of the abdominal segments, and in the structure of the mouth parts. The most interesting and characteristic features are to be found in the mouth appendages, and especially in that structure termed by Morgan (*Ann. Ent. Soc. Amer.*, 1913, p. 388), the 'plankton rake,' which consists of a series of curved, stiff, bristle-like outgrowths forming a rake- or comb-like structure, at the apex of the inner lobe (*lacinia*) of the maxilla. This appears to be used as a scraper, collecting food material from the stone surface on which the insect supports itself, and is unlike the structure seen in any other nymph with which I am acquainted. The emergence of the subimago evidently takes place at the latter end of May or the early part of June. The imago lives for about four days.

A very good and full description of the nymph and subimago, with figures, is given by Dr. E. Schoenemund (*Mitt. d. Deutsch. ent. Ges.*, Vol. I, No. 7, 1930, pp. 100-105), where he states that the nymph is widely distributed in the Carpathians, and occurs at altitudes up to 1965 m. Figures of an *Ameletus* were also given by Eaton in his 'Monograph' on Plate 49, under the title '(?) *Chirotonetes* sp. nymph,' and a short account occurs under the same name on p. 204, 'with generical identification doubtful,' from American material supplied by Dr. Hagen, and probably referable to *A. ludens* Needh.

A. inopinatus has thus occurred to me as follows:—

Imagos.	Male.	Malham (Yorks., V.C. 64), 14/6/31.
	Female.	Bradford Dale (Derbyshire); 24/5/35.
Subimagos.	Male.	Keld (Yorks., V.C. 65), 15/5/37.
	Male.	Selside (Yorks., V.C. 64), 19/5/37.
Nymphs.		Malham (Yorks., V.C. 64), 2/7/35, etc.
		Selside (Yorks., V.C. 64), 23/4/35 and 19/5/37.
		Buttertubs Pass (Yorks., V.C. 65), 27/4/35 and 18/5/37.
		Keld (Yorks., V.C. 65), 15/5/37 and 16/5/37.

Judging from my experience during the past few years I think the species will prove to be less rare and more widely distributed in this country than we at present imagine, and that search in suitable streams will discover the nymphs even if, for some reason, the imagos remain more elusive.

THE RINGED PLOVER BREEDING AT MALHAM TARN

T. H. B. BEDFORD

On June 26th, 1937, while searching for mosses in the marshy area which lies due south of Middle House at Malham Tarn, my attention was attracted by the call of the Ringed Plover. A pair of these birds were endeavouring by all the means in their power to draw me away from this region. As I moved over the marsh their cries became more and more plaintive, and from time to time they would alight, trail their wings and posture in that peculiar manner which must be familiar to anyone who has approached their breeding ground during the season. It was apparent that the birds were breeding near by. No attempt was made to discover either the nesting site or the young. Although in some quarters this may be regarded as a lamentable lapse, I felt that the birds should be given every encouragement to colonise the area and that this would best be achieved by disturbing them as little as possible. With the Plover were a pair of Dunlin. It was obvious from their behaviour that they too were breeding birds. Their general demeanour, however, was more subdued and lacked the highly emotional outbursts of the Plover. On July 3rd I revisited the area. On this occasion only one Ringed Plover appeared and it endeavoured in a rather feeble manner to divert me from the spot. Very soon however it appeared to lose interest and departed. The second bird was not seen. A search for the nesting site and for egg-shell fragments was unsuccessful.

On July 17th, another visit was paid to the breeding ground. On this occasion the two birds were encountered at the South-west of the marsh near the Gordale Beck. They were obviously disturbed by my presence, and again attempted to divert me. After a patient search two young birds were discovered. They were in first plumage and well able to fly.

The birds with their young were seen again in the original area on July 24th. It was interesting to observe that the old birds still fussed and attempted to divert one's attention although the young were proficient on the wing. The young birds seemed to be guarded by the female who was always near them. It was at her call that they took to flight or lay low. The male was usually feeding alone or with the Dunlin at some distance from his family. When, however, danger threatened, he would return and was equally energetic in attempting to divert one's attention and to aid the escape of the young.

Before considering the literature relating to the inland breeding of the Ringed Plover, some further details of the

locality in which the birds were breeding may be of interest. Malham Tarn is approximately twenty-five miles from the nearest coast-line which is at Carnforth in Morecambe Bay. The actual site itself is at the north edge of the marshy area which lies directly south of Middle House and is approximately threequarters of a mile from the Tarn. The region has an altitude of about 1,330 ft. O.D., and slopes very gently to the south. It has an evil reputation with the local farmer who considers it one in which his sheep acquire fluke disease. It consists for the most part of moss-covered knolls which are surrounded by marly mud. Here and there firmer areas are to be encountered, but the whole region is normally very wet and is best approached in waders.

No record of the inland nestling of the Ringed Plover is contained in Nelson's *Birds of Yorkshire*, London, 1907. A careful search through the volumes of *The Naturalist* dating back to the year preceding the appearance of Nelson's book has yielded one solitary record. In *The Naturalist*, 1918, p. 234, R. Fortune states that 'the Ring Plover has for the last two years nested in a certain place in Upper Nidderdale and has successfully reared young. They are again nesting this year but only one pair. The female is sitting and the male spends his time with a party of Dunlin.'

As regards the neighbouring counties, the following extracts are instructive. Whitlock, in *The Birds of Derbyshire*, Derby, 1893, states that on a single occasion a pair may have bred by the Trent. 'In July, 1889, I came upon a brood of four young birds in the Parish of Long Eaton. Though well able to fly, they had not long attained first plumage. I think it is, therefore, possible that they may have been hatched in the neighbourhood.' 'Mitchell' in *The Birds of Lancashire*, London, 1892, states 'I am not aware of its nesting anywhere inland.' Hancock, in *The Birds of Northumberland and Durham*, London, 1874, says, 'I have never known it lay its eggs far from the sea shore.' Bolam, however, in *The Birds of Northumberland and the Eastern Borders*, Alnwick, 1912, seems to regard the Ringed Plover as a common inland breeder. He says, 'Inland the Ringed Plover follows the course of some of our larger rivers almost to their sources, breeding on gravel beds on the Tweed, at the Lees, above Coldstream (where a single pair have been located from time out of mind of the oldest inhabitant), and at Carham and Kelso; also on the Teviot, and no doubt on some other of the tributary streams.' Other stations are also given. Later we are informed that 'Several of these stations are more than five and twenty miles from the sea and they are particularly mentioned here as it has sometimes been stated in print that this species is confined to the coast in the breeding

season on the Borders, although Selby had already observed the contrary.'

Perhaps the most interesting notes on the inland nesting of the Ringed Plover are contained in *A History of the Birds of Norfolk*, by Riviere, London, 1930. This writer states that 'As a breeding species (in Norfolk) it is found not only on the coast-line but also far inland on the sandy banks and warrens in the south-western division of the county.' Later he remarks 'The curious local habit of the Ringed Plover in breeding upon inland heaths and warrens in South-west Norfolk and North Suffolk appears to have been unknown to Sir Thomas Browne, but was referred to by J. D. Salmon in 1836 (*Loudon's Mag. Nat. Hist.*, Vol. 9, p. 522). A census of these inland breeding Ringed Plover has still to be made, but W. G. Clark (*In Breckland Wilds*, London, 1925), that great authority in Breckland, estimated the breeding number between the valley of the Nar and the valley of the Lark—which includes a part of Suffolk—between Old Buckenham to the east and the Fens to the west, at some four hundred pairs. A theory which has been advanced to account for the presence of the Ringed Plover on these inland heaths is that these breeding sites were in post-glacial times coast sands bordering the Wash, which then extended to the east as far as Brandon; and in support of this view is the fact that there are present within this area a number of species of insects and plants otherwise only to be found on the sea coast.' Clark, however, does not accept this theory but considers that the 'loose blowing sand containing many stones forms the desired nesting habitat of the Ringed Plover. Where this is found outside the breck area, as in the green sand which forms the higher part of Grimston Warren and Roydon Common, the Ringed Plover also breeds. Its food, which consists of small crustacea, insects and worms, would be abundant inland—substituting mollusca for crustacea—as on the coast.'

Witherby in *A Practical Handbook of British Birds*, London, 1924, remarks '... a few breed inland, as in the Cheviots, West Suffolk, Norfolk, Middlesex, Surrey and Worcester on banks of rivers and lakes, warrens, sewage farms, etc.', while Dresser in his *Manual of Palaearctic Birds*, London, 1903, states that 'Some resort to inland warrens or heaths during the nesting season.'

Records of the inland breeding of the Ringed Plover invite interesting speculation. Are we witnessing the initial stages of a change in habit such as is presumed by many to have occurred in the case of the Blackheaded Gull and the Redshank? Only by patient observation over many years will it be possible to supply an answer to this question.

I would be grateful for any Yorkshire records of the inland breeding of the Ringed Plover that may have escaped my notice. It is to be hoped that the information regarding the breeding site of the birds at Malham Tarn will not be abused.

NOTES ON THE BREEDING HABITS OF THE SLOW-WORM, *ANGUIS FRAGILIS* LINN.

MERVYN G. PALMER

IN the Ilfracombe Museum for several years I have had a large vivarium with living examples of locally-captured lizards and slow-worms.

Among the slow-worms are :—‘A,’ a red-copper coloured male taken in September, 1932, ‘B,’ a very dark-brown, almost black, female, captured in September, 1934, and which that year produced a brood of young under my observation, and, ‘C,’ another normally-coloured male, taken in 1935.

On May 8th, 1936, ‘A’ was pursuing the female. At that time I did not know ‘A’ was a male, and thought they were fighting. Later that morning I found ‘A’ had seized ‘B’s’ head, and with difficulty separated them, ‘B’ making off to a distant part of the cage. In the early afternoon ‘A’ again attacked ‘B’ and again I separated them. About four o’clock both had disappeared into their den, where I found them in coition. The male had seized the female’s head, his mandible being in her mouth, the heads at right-angles. The bodies were intertwined side by side, the vents completely meeting and no organs being visible.

The following morning (May 9th) the pair were still in contact, but the male had altered his grip, having the female’s head entirely in his mouth, not merely interlocked jaws as before. By midday they had separated. In the early afternoon the other male (‘C’) was in copulation with the female ‘B.’ He held her head in the same manner as that described but soon left her.

On September 21st, 1936, about 10 a.m., the female gave birth to eight young, which later were increased to ten. These all were of the typically tarnished-silver colouration, of young slow-worms. The period of gestation was thus exactly nineteen weeks.

CORRECTION

IN the Report of the Bubwith Meeting, the name of Mr. A. K. Wilson, of Hull, should have appeared as the joint finder of *Carex palliscens* and *Juncus compressus*.—C. M. ROB.

RECORDS

ROSE-COLOURED STARLING (*PASTOR ROSEUS*) AT SPURN

ON August 17th, 1937, just before noon, my wife and I walked down the line between Kilnsea and Spurn Point. Several birds, notably Wheatear, Stonechat, and young Cuckoo ready for migration, seemed to find the rails to be convenient perching places from which to scan the sand, grasses, etc., for insects. As we advanced they maintained their distance by short flights, eventually turning to the scrub to right or left, but usually returning to the rails after we had passed. One bird shaped and sized like a Starling, when viewed through telescope and field-glass against the sunlight, seemed to glint metallically; but I was able to identify it as a rose-coloured pastor. Viewed from the reverse position, with the sun behind us, an arc having been described through the scrub back to the line, the bird had the appearance of a miniature hooded crow, with the mantle, sides and underparts of a pale pink hue instead of grey; and with pink legs and feet. The black, backward crest wavered in the wind. We set the bird down as a male. The pastor was seen again on our return journey. When the bird flew closely past us from the scrub it chattered weakly in a manner reminiscent of the Fieldfare, but much more subdued.

I am not aware of any recent record of the species for Yorkshire. Among the occurrences given in Nelson's *Birds of Yorkshire* is one of an old female at Spurn on August 30th, 1884.—RALPH CHISLETT.

MONTAGU'S HARRIER (*CIRCUS PYGARGUS*) BREEDING IN YORKSHIRE

No news more welcome to Yorkshire ornithologists has been available for a long time than the record by Captain W. S. Medlicott of the successful breeding of a pair of Montagu's Harriers in the North Riding in 1937.

The nest was found on June 27th, when the hen arose from 5 young of different ages, estimated by the finder at 4 days for two, 9 days for two, and 12-14 days for the eldest of the brood. A month later Captain Medlicott was able to report that the 5 young were all on the wing.

With young in the nest it was thought advisable to keep the information as private as possible. With young on the wing Captain Medlicott considered that the greatest danger would be from the guns of keepers; and he therefore appealed in the *Yorkshire Post* 'to landowners, shooting-tenants, game-keepers, and all who carry guns to spare this splendid bird,' and so to 'assist in adding a new regular breeding species to Yorkshire.' Two years ago, when a pair of Montagu's Harriers succeeded in rearing young in another North Riding area,

Captain Medicott found both landowners and keepers ready to help, when the rarity and interest of the bird had been explained to them. Most of us can help a little in this way.

The Wild Birds Protection Acts Committee, who through the writer have been conversant with matters from the discovery of the nest, have every hope that the considerable efforts made by Captain Medicott will prove successful, and that the species will return another year. On our Yorkshire moors there is ample room for several pairs of these birds. Frogs, adders, lizards, mice, voles, small birds, earthworms, and especially beetles form the food supply; young game-birds are rarely taken. With wings at a set angle and occasional flaps, Montagu's Harriers may be seen to quarter the ground; the hen brown with a white root to her tail, the cock blue-grey with black bar and tips to his wings.

Previous records are all of the 'attempted' breeding of this species in Yorkshire, mainly in the south of the county, where I know of none in recent years, although I sometimes see an old bird flying over a former breeding ground in March or early April. Breeding records for the North Riding are very scarce; and the few published relate to 'attempts' in the middle of the last century. The beauty of Captain Medicott's records lies in the fact that the 'attempts' were successful.—RALPH CHISLETT.

SPHAGNA FOUND IN THE NEIGHBOURHOOD OF KELD

during the Y.N.U. Meeting, Whitsuntide, 1937.

A. THOMPSON.

New records for V.C. 65 are marked *.

- Sphagnum fimbriatum* Wils. var. *validius* Card., nr. R. Swale, below Keld.
- S. Warnstorffi* Russ., nr. Birkdale Tarn.
- S. rubellum* Wils., Ashgill Side and Gt. Shunner Fell.
- S. acutifolium* Ehrh., White Wallet and Kisdon Pike.
- S. recurvum* P. de B. var. *robustum*, Braid., Gt. Shunner Fell; Whitsundale and Swaledale above Keld.
- S. recurvum* var. *majus* Ångstr., nr. Birkdale Tarn; above mine tip, nr. Keld; Gt. Shunner Fell and Ashgill Side.
- S. fallax* von Kling. var. *laxifolium* W., Kisdon Pike.
- **S. fallax* von Kling. var. *robustum* W., Whitsundale.
- **S. fallax* von Kling. var. *microphyllum* W., Gt. Shunner Fell.
- S. cuspidatum* Ehrh. var. *falcatum* Russ., Kisdon Pike and Ashgill Side.
- **S. cuspidatum* Ehrh. var. *submersum* Schp., Gt. Shunner Fell.
- S. cuspidatum* Ehrh. var. *plumosum* Bryol. germ., nr. Birkdale Tarn.
- **S. obesum* W., var. *canovirens* W., Whitsundale.
- **S. inundatum* W., var. *lancifolium* W., Whitsundale and White Wallet.
- **S. auriculatum* Schp. var. *laxifolium* W., Whitsundale.
- **S. auriculatum* Schp. var. *ovatum* W., Kisdon Pike.
- **S. auriculatum* Schp. var. *submersum* W., Whitsundale.
- **S. papillosum* Lindb. var. *normale* W., Gt. Shunner Fell.
- S. cymbifolium* Ehrh., Gt. Shunner Fell; White Wallet; Kisdon Pike.

YORKSHIRE NATURALISTS AT BLUBBERHOUSES

JULY 10th, 1937

THOUGH Blubberhouses is quite conveniently situated for most of our societies, this meeting was not at all well attended. Travel facilities were not good and weather conditions were unpromising. A very small party left headquarters at the start, and only a few more joined us before the return to tea. At the meeting, at which the President took the Chair, a hearty vote of thanks was accorded to the Waterworks Department of the Leeds Corporation and to the administrators of the Charlesworth Trust for the facilities granted to us on this occasion.

Ornithology : Mr. J. P. Utley writes : Cold winds and showers tended to keep bird-life rather quiet in the Washburn Valley, nevertheless there was enough to be seen to make the visit very interesting.

Fewston Reservoir was first visited and probably due to the weather conditions shewed up very bare. Still it did give a pair of Great Crested Grebes with one young. Other members of the party reported later having seen a second pair with three young. It was too early for many duck to be in evidence, and the only species observed were Pochard and Mallard. The reservoir also yielded Coot, Moorhen, Dabchick, Snipe and Sandpiper.

Observation was not too good in the Washburn Valley due to its being narrow with steep sides and deeply wooded in places. The most noteworthy observations were Woodcock and a pair of Golden Crested Wrens with fledged young. No Woodpeckers were recorded and on only one occasion was the Cuckoo heard : I think the majority of Cuckoos had already taken their departure. Golden Plover were observed in flocks ; this seems to be somewhat earlier than usual. No Owls were noted and the only bird of prey to be seen was a Sparrow Hawk. Tits were in very small numbers, Blue Tit and Cole Tit being the only members noted. Wagtails were also scarce, only the Pied Wagtail being seen at West End.

In all 54 kinds of birds were recorded :—Great Crested Grebe, Pochard, Mallard, Coot, Moorhen, Dabchick, Golden Plover, Lapwing, Snipe, Sandpiper, Curlew, Dipper, Woodcock, Pheasant, Partridge, Grouse, Blackbird, Thrush, Mistle Thrush, Wheatear, Redstart, Robin, Wren, Goldcrest, House Sparrow, Chaffinch, Greenfinch, Yellow Hammer, Lesser Redpoll, Hedge Sparrow, Spotted Flycatcher, Lesser Whitethroat, Willow Warbler, Sedge Warbler, Blue Tit, Cole Tit, Skylark, Meadow Pipit, Tree Pipit, Carrion Crow, Rook, Jackdaw, Magpie, Starling, Cuckoo, Wood Pigeon, Sparrow Hawk, Swift, Swallow, House Martin, Sand Martin, Heron, Herring Gull. In addition, Mr. Riley Fortune reported the Garden Warbler.

Mammalia : Of Mammals there were numerous Rabbits, a Water Vole was seen at Fewston, and obstruction was made to a Stoat hastily moving and carrying a Long-tailed Fieldmouse. No evidence of any Badgers was received.

Freshwater Biology : Mr. H. Whitehead says : Very few insects were on the wing owing to the rather cool wind and dull weather. A swarm of the Black Caddis *Mystacides azurea*, looking like fragments of burnt paper was seen in a sheltered bay on Fewston Reservoir. The other winged insects were all taken by shaking the branches of trees or by sweeping the low growing vegetation with a net. This method of collecting yielded single specimens of the Caddis Flies *Limnophilus luridus*, *L. sparsus* and *Hydropsyche angustipennis*. The small Stoneflies were more numerous, *Isopteryx torrentium*, *Amphinemura cinerea*, *Leuctra inermis* and *L. moselyi*.

The main stream above the reservoir has a variety of conditions favourable to the life of aquatic insects. The stream in places is sheltered

by trees, chiefly Alder, which offer a good landing for freshly emerged insects. The stream bed is varied too and has a number of large stones, many of which are cemented together, and in places they are covered with moss. Nymphs of *Baetis* were plentiful and some of the stones had eggs of this Mayfly under them. Larvæ of various Limnophilids were common and also pupæ of *Rhyacophila*. A larva of *Philopotamus montanus* was taken.

Some of the small feeding streams were rich in larvæ of *Silo pallipes*, nymphs of *Baetis*, *Ecdyonurus* and *Leuctra*. Of the Diptera, *Simulium* larvæ were plentiful and under a damp stone was found the curious and interesting larva of *Dixa*.

Other insects were scarce and Mr. J. H. Ashworth had little to report for the dipterists, the large red-legged *Bibio pomonæ* F. was caught, also *Leptis scolopacea* L. and *L. lineola* Fab., near the stream was *Hilara chorica* Fall. and *Mydaea pagana* Fab. Amongst the Limnobiidæ the few seen included *Tipula scripta* Mg., *Limnophila lineolella* Verr. and *Molophilus propinquus* Egg.

Flowering Plants : Miss C. M. Rob : A very pleasing feature of the day was the finding of *Carex helodes*, which, although not mentioned in this meeting's circular, is given in the one for the Y.N.U. Meeting held here in 1883. There was a fair patch of it up the valley in wooded ground. Other plants found in the valley included *Ranunculus Lenormandi*, *Stellaria nemorum*, *Cardamine amara*, *Crepis paludosa*, *Vaccinium oxycoccus*, *Drosera rotundifolia*, *Narthecium ossifragum*, *Mimulus luteus*, *Potamogeton polygonifolius*, *Melampyrum pratense*, *Carex pallescens*, *C. binervis*, and *Scirpus setaceus*. There were several plants of *Verbascum Thapsus* near a ruined cottage.

Only a small part of the shore was examined, and its most noteworthy plants were *Peplis Portula*, *Littoralis lacustris*, *Polygonum amphibium*, *Scirpus sylvaticus*, *Hypericum humifusum*, *Carex canescens*, *C. remota*, *C. flava*, and *C. ampullacea*.

Mosses : Mr. F. E. Milsom and C.A.C. write : Although scenically the district was very attractive, bryologically it was poor. Only the commonest species of mosses and hepatics were noted, and these were limited in number, no doubt owing to the absence of lime.

The most interesting things seen were perhaps the varieties of *Dicranella heteromalla*. In the woods bordering the reservoirs, the type graded frequently to the var. *interrupta*, while in a disused quarry near the main road, the var. *sericea* was present in good condition. Near Mogington Bridge, *Orthodontium gracile* Schwaeg. was seen in some plenty both on rocks and on tree stumps, but it was all the var. *heterocarpa* Wats., near at hand in the ditch was *Dicranella squarrosa* Schp. This is now overgrown and no fruit was seen, but years ago before the young trees were planted here, it fruited freely.

Ecology : Mr. A. Malins Smith : The area covered was entirely on gritstone, and both the woodland—Oak, Birch—and moorland—ling and heath—were of the type familiar over a large part of the West Riding on acid soils. Nevertheless noteworthy features occurred. One of these was the striking difference between the ground vegetation of the woods on the right and left banks of the Washburn above Blubberhouses. The right bank, facing east, was the wetter, and the undergrowth of the oak here was of the Bluebell, *Holcus* type, with a good deal of Fern (Male, Lady and Buckler) and also Wood Sorrel. The Oak above was plentifully replaced in parts by planted Spruce and Larch. By the streams the Primrose occurred and abundant opposite-leaved Golden Saxifrage. The Oak-Birch wood on the left bank, facing west, had as undergrowth chiefly Bilberry, Ling and Wavy Hairgrass, evidence of much drier conditions at the surface. Here the Oak above was mixed *Q. sessiliflora* and *Q. pedunculata* with hybrids between the two. In this wood Birch

seedlings were excessively abundant. Near the river the Great Woodrush occurred in wet areas.

In spite of the generally acid character of the soils, it was found that a spring issuing from this slope had neutral water, pH=7.0. Whether this was due to the Cayton Gill 'Shell Bed' mentioned in the circular it is impossible to say. The neutral water had, however, an influence on the vegetation for a bog a little way below was dominated by *Carex glauca* and the Orchids in it were all *O. Fuchsii*. Here the pH was 6.7. The usual statement that this Orchid occurs in more basic soils than *O. maculata* was supported by the soil tests of a bog on the opposite bank dominated by *C. binervis*. In this all the Orchids were *O. maculata* and the soil was distinctly more acid with pH 6.2. In the neighbourhood of the spring mentioned above, Milkwort was common and it was the species *Polygala vulgaris*, the Common Milkwort of our limestones.

Near to the hamlet of West End was an old disused mill dam in which the main vegetation was an association of *C. ampullacea*, pure except for odd Foxglove and Marsh Thistle plants in their first year rosette form. This grew in blackish wet muddy clay of acidity pH 5.7. Near by in exactly similar soil the vegetation was *Juncus communis*. There were also patches of *Phalaris arundinacea* in soil of the same acidity but more open in physical character. At the meeting, our President, Dr. Pearsall, furnished an explanation of this rather puzzling group of facts by stating that the *Phalaris* was a plant of deposited silt soils and that in the non-silted area *Juncus* replaced the *Carex* probably owing to grazing which it could withstand much better than the Sedge.

In the whole of this area tree seedlings were plentiful. In addition to the Birch already mentioned, Hazel, Sycamore, Ash, Beech, Alder, Rowan and Elm seedlings were found and slightly older plants of Oak.

Fewston Reservoir provided some good examples of zonation from wetter to drier soils. The general succession—wet to dry—was:—

- (1) *Polygonum amphibium* in the water and on recently uncovered mud.
- (2) *Glyceria fluitans*, locally abundant on flat muddy shores.
- (3) *Peplis portula*, *Callitriche* and *Littorella lacustris* on drying mud.
- (4) *Ranunculus Flammula*, conspicuous by abundance of flower.
- (5) A mixed zone, showing *Carex ovalis*, Skullcap, Marsh Bedstraw, Water Forget-me-not, Sneezewort and a small Rush.
- (6) *Phalaris arundinacea* on accumulated silt. Local associations of *Equisetum limosum* occurred where streams ran in and the fresh water flowed over the mud.

RECORDS OF YORKSHIRE FUNGI

MR. R. C. FOWLER JONES has arranged for the publication of *A Catalogue of Yorkshire Fungi*, to summarise, in book form, the mycological records by Vice-Counties. Copies will be sent to members of the Mycological Committee, to Presidents and Officials of the Union, and to Affiliated Societies. Mr. Jones is also anxious that a copy of the work should be in the hands of every field naturalist in Yorkshire whose studies would be aided thereby. He wishes it to be known that copies may be obtained by personal application to the Recorders and Secretary of the Mycological Committee, or by postal application to Dr. Grainger.

Recorders to the Mycological Committee.—Dr. John Grainger, Tolson Memorial Museum, Ravensknowle, Huddersfield. Mr. Willis G. Bramley, Spring Cottage, Pallathorpe, Bolton Percy, Nr. York.

Secretary to the Mycological Committee.—Mr. G. F. Sheard, Devonshire Hall, Headingley, Leeds 6.

THE BRITISH NEUROPTERA¹

JAMES M. BROWN

WE are glad to see that the second part of the Ray Society's valuable Monograph on the British Neuroptera has been published only a year after the appearance of the first volume. It is well up to the standard of excellence of that part, and will prove a welcome addition to the literature of this interesting order of insects. It is perhaps not of the same general interest to entomologists, other than those specially taken up with this group, as it is largely systematic, although when treating of the various individual species the author deals very fully with questions of bionomics, habitats, and life histories.

The present part completes the systematic account of the Hemerobiidae or Brown Lacewings commenced in Volume I, and takes in the whole of the Chrysopidae or Green Lacewings. Each species is treated under the headings imago, habitat, early stages, with in most cases a full account of the third instar larva, and distribution. We note that of the thirty-eight species described twenty-seven are reported for Yorkshire, two recent records being omitted. In connection with the habitat of *Nathanica capitata*, the author states that it appears to be associated exclusively with conifers. This does not agree with our own observations, for whenever we have taken this species it has been associated with the oak, and conifers have not occurred in the neighbourhood. This we believe has been the experience of other Yorkshire entomologists.

A brief but useful account of methods of collection, preservation, and rearing is given as an appendix. The inevitable changes in nomenclature occur, and one of the last statements in the book is to the effect that 'all the British species placed in *Boriomyia* in the present Monograph are now removed to *Kimminsia*' (a new genus described on pp. 254-5).

Thirty-one pages of bibliography complete the text.

As was the first volume, the present one is excellently illustrated. A large number of clear and useful text figures of structural features, and fifteen plates, including seven of wing photographs, four of larvæ, and four in colour, are all up to the usual high standard of the series.

Altogether the volume reflects great credit on both author and publisher, and together with the first volume will prove a boon to students of the British Neuroptera.

CORRESPONDENCE

To the Editors of *The Naturalist*.

DEAR SIRS,

It must have struck many of your readers as somewhat remarkable that the timbers of our grand old Churches, after apparently surviving intact century after century, should of late years succumb so generally to the attacks of the Deathwatch Beetle—an insect which, if we may judge by Sir Thomas Browne's *Pseudodoxia Epidemica*, was common in England certainly three hundred years ago.

I have had it suggested tentatively that the disuse of incense might possibly be accountable. I am no entomologist nor have I any practical knowledge of timber, but it struck me that there might be something in the theory; and it would certainly be interesting to know if this possibility has been considered, and also whether churches where incense is still in use enjoy immunity, total or even comparative, from the pest. It may be that the fumes of incense did act as a deterrent, and that this, aided perhaps by the very smoky atmosphere of our domestic dwellings until comparatively modern days, kept in check an insect which has since increased in so alarming a fashion, not only in churches but in buildings of a non-ecclesiastic character.

Yours faithfully,

T. HYDE-PARKER.

¹ *A Monograph of the British Neuroptera*, Vol. II, by F. J. Killington, published by the Ray Society, 1937, 25s.

JAMES GREEN OF THORNTON-LE-DALE AN APPRECIATION

By the death of Jim Green the Yorkshire Naturalists' Union, and particularly the Wild Birds' Protection Section, have lost a valuable helper and friend.

Jim Green served as a Watcher and Recorder for the Wild Birds' Protection Committee for the last 30 years. Even in the days before helping the Wild Birds' Protection Committee, Green was active; watching and protecting all kinds of wild life.

As a gamekeeper he was an excellent man, and developed to a great extent all the faculties for observation which go to make a good gamekeeper. He was not only an observer of all wild life, he also studied and wanted to know why.

Everybody who went to see him in any branch—birds, beasts, insects, flowers, stones—could learn something. To the young people he was an excellent guide and philosopher, and would go out of his way to explain the beauty of the things he saw around him.

He was one of the few men who, if you asked him something he did not know, had the courage to say that he did not know, but usually the answer to a question like that was 'I do not know, but will watch and see,' and to watch and see, involving days or weeks of labour and trouble, were accounted to him pleasure if he could only learn something.

Although officially he was not a member of the Y.N.U., the Union and its members have sustained a great loss by the passing over of James Green.

Our kindest thoughts go out to his wife and family with the assurance that his kindly influence can never die.—F.H.E.

HALIPLI AT ASKHAM BOG

WM. J. FORDHAM.

ON June 11th the Rev. E. J. Pearce and the Rev. C. E. Tottenham took the following *Halipili* at Askham Bog (V.C.64). In the large pool north of the road bridge over the railway just beyond the signal box :—

H. immaculatus Gerh. (1 ♀.)

H. lineolatus Mann. ('*browneanus*' form). (1 ♀.)

In the pond nearest the open field, close to the railway line :—

H. confinis St. (1 ♂.)

H. ruficollis De G. Common.

In the ditch in the open field :—

H. ruficollis De G. Fairly common.

H. lineatocollis Marsh. (1.)

H. immaculatus is only on record for the county from Skipwith (61) and the River Wharfe (64).

H. lineolatus is recorded from the River Wharfe (64), and the form *browneanus* Shpl. is new to the county.

H. confinis is new to V.C.64, being on record from Bubwith (61), Whitby and Burton Head (62), and Barnsley and Askern (63).

REVIEWS AND BOOK NOTICES

An Anthology of Modern Animal Writing, edited by **Frances Pitt**, pp. xii+292. Nelson, 3/6. This is essentially a collection of the writings of the newer school of natural history writers. Nowadays it would be difficult for anyone to establish a claim to be regarded as a genuine naturalist unless he could show that he was a critical observer of living things. To be a collector of corpses arranged in boxes, glass cases, or

cabinets is not enough. Miss Pitt has confined her selection to those who have fulfilled these conditions, and in doing so she has produced a most admirable little volume containing extracts from the writings of most of the foremost bird and animal watchers of our day. In such a book as this we expect to find the writings of Edmund Selous, H. Eliot Howard, E. M. Nicholson, and Lloyd Morgan, and here we have them all, along with most of the others of the same school, a total of 32 altogether. The book is No. 9 of Nelson's Modern Anthologies, and is very well got up.

Wonders of the Sea : Shells. 15 colour plates painted from nature by **Paul A. Robert**, with an introduction by **Julian Huxley**. Batsford. 5s. 6d. This is a series of exquisite coloured drawings of some of the most beautiful molluscan shells to be found in the whole world. Although the originals were hand-paintings, the accuracy in colour and minute detail is that of the finest colour-photography. The introductory articles and the descriptive matter is entirely suited to the layman, who will certainly want to know more about conchology when his appetite has been whetted in this fashion.

Oyster Biology and Oyster Culture, by **J. H. Orton**, pp. 211, 57 figs., 5s. net. Edw. Arnold and Co. This book is based on the Buckland Lectures for 1935, a series of lectures instituted by the Trustees of the Buckland Foundation to commemorate Frank Buckland's interest in the practical application of science to sea fisheries. Hardly any better subject could have been chosen for this purpose, for though oyster culture has long been carried out it is only of recent years that the scientific principles underlying it have been worked out. It is fitting that Professor Orton, who has done so much on the scientific aspects of this problem, should have the opportunity of outlining the general position. Scientific interest in the oyster is, of course, largely due to the probability that it is representative of a considerable class of marine mollusca, and this volume tends to emphasise the importance of this aspect of the investigation. It deals with the habits, life history and feeding methods, and also with recent results on changes of sex in the oyster and its astonishing productivity. An analysis of the factors controlling shell shape concludes the first Lecture. The second one deals with the application of the results to the control of oyster beds, and this also gives a full account of pests which attack oysters and the effects of unfavourable environmental conditions. A brief outline can do no justice either to the breadth of the treatment, or to the wealth of detail supplied in illustration. This is certainly a book of great interest to the marine biologist or to those interested in aquatic mollusca.

The Nation's Sea-fish Supply, by **E. Ford**, pp. 112, 4 plates and 8 figs., 3s. 6d. net. Edw. Arnold & Co. This, like the last-mentioned book, is based on the Buckland lectures, those given in 1936. The subject is, however, a more general one in that it seeks to determine how far existing methods of fishing need be modified by the State in order to maintain sea fisheries in an adequate condition of effectiveness. Mr. Ford discusses first the existing methods of control and their difficulties. He then considers the evidence as to the effectiveness of nets with meshes of different sizes, and lastly, deals with the effects of thinning and food supplies upon the fish populations. To the reviewer, at least, it seems that Mr. Ford has produced an extremely dispassionate survey of the problem in its varied biological and commercial aspects, and, it must be admitted, an overwhelming case for further control of our sea fisheries in their own interests.

Plant Ecology, by **Hilda Drabble**, pp. 142, 24 illustrations, 7s. 6d. net. Edw. Arnold & Co. This book is essentially a textbook of plant

ecology. It is divided into two parts, a shorter first part dealing with plant nutrition, the soil and the factors controlling plant communities, and a second part describing the typical plant communities in this country. These are treated in a simple and straightforward manner, and their successional inter-relationships are clearly indicated. The illustrations are good and well chosen, and there appears to be no doubt that the book will serve a useful purpose. Such a book is certainly badly needed. The author would probably be the first to admit that plant ecology is not an easy subject to generalise about. It demands an exceptional first-hand knowledge of vegetation in the field, coupled with an eye for country and a genius for condensation. In criticism of the present book, it must be said that its author has not always possessed the first of these attributes. The reader will often, no doubt, be puzzled by the similarity between such communities as 'grass moor' and 'siliceous grassland.' It is also remarkable to find in treatment of the latter no reference to the *Agrostis-Festuca* grasslands of Wales, the Lake District and Southern Scotland. Such features detract from the wider utility of the book without necessarily interfering with its special aim.

A Century of Nature Stories, with an Introduction by J. W. Robertson Scott, pp. 1,024. Hutchinson, 3/6. All aspects of nature are covered in this wonderful 3/6 worth. The authors range from Gilbert White with 90 pages of the letters to Thomas Pennant, to Julian Huxley, R. M. Lockley, and Frances Pitt. It would be a carping critic who would complain of omissions. There are excerpts from the travel writings of Darwin and Bates, and some of the best of Richard Jefferies, H. J. Massingham, and Henry Williamson. Altogether there are forty-four separate stories by thirty-eight authors. This is an ideal book for the naturalist to take for holiday reading.

Pests of Ornamental Garden Plants, by G. Fox Wilson, pp. vi+128, with 112 photographic and other illustrations. H. M. Stationery Office. 3s. 6d., postage extra. This useful compilation is Bulletin No. 97 of the Ministry of Agriculture and Fisheries, and it contains very full information of much value to both amateur and professional gardeners. The author has divided Control Measures into Cultural Methods, Mechanical Methods, and Chemical Methods with which he deals most adequately. This section closes with detailed rules for spraying and fumigating. The next section has complete and copiously illustrated descriptions of general pests, and this is followed by articles on pests arranged according to the part of the garden which is most likely to suffer from them. The low price of the book and the exhaustive and clear treatment of the subject should ensure for it a great welcome from all serious gardeners.

A Pocket Book of British Trees, by E. H. B. Boulton, pp. 182, 82 photographic plates, 5s. net. A. and C. Black, Ltd. While this book is adequately described by its title, some qualification of the words 'British Trees' is necessary. These include all the species commonly grown in this country and not only the native forms. This is quite one of the best books published on this subject, and it is remarkable in value. The descriptions of the species are largely non-technical, and a glossary is given for such botanical terms as are employed. A useful key for identification purposes is given. The feature of the book is, however, the excellent illustrative photographs. These show the distinctive features clearly, and the author, his photographer and his publisher have accomplished something which is of the best class. The book may be recommended with confidence, both to botanists and the general public.

Ecological Animal Geography, by R. Hesse, W. C. Allee and K. P. Schmidt, pp. 597, figs. 135, 30s. net. (Chapman and Hall, London.) This important volume is a translation of the German work by Professor Hesse, incorporating much more recent work, particularly less easily available American papers not considered in the original. While the translators have made considerable changes in the material, the original form and arguments are retained, and the volume is made particularly useful to English readers. In broad outline, the work deals with the ecological basis of animal geography. Ecological factors are considered in detail, but rather to help in the attempt to consider the factors in world distribution, than for the purpose of outlining in detail animal communities. The latter are indicated only as groups or species characteristic of large areas and no detailed lists are given. The book gains greatly from this method both in ease of reading and in the development of general arguments relating to animal distribution. In many senses, moreover, the book represents a very definite stage in the development of animal geography. The difference in outlook between this work and those published in the last century is very marked. Works such as those of Wallace were concerned mainly with birds and mammals, homoiothermal animals whose distribution is only to a minor extent affected by factors such as temperature. Hence in these earlier works the importance of climatic and other ecological factors tended to be ignored or underestimated. The investigations of the ocean and of freshwaters during the last fifty years has tended to move modern animal geography to the opposite extreme. In these habitats, the influence of the habitat upon animal distribution is often extremely definite and also the physical and chemical factors change slowly and can be accurately measured. Hence the tendency is to seek exact quantitative relations between the organism and its environment. The advance of physiological knowledge and of experimental technique has strengthened this tendency. The present work is a notable example of these changes in outlook and knowledge, and in particular, the advance since Wallace's day is reflected in the space allotted to the different subjects. The general foundations of animal geography are discussed in 135 pages. A similar length is devoted to marine habitats and animals and 89 pages to fresh water life. The distribution of terrestrial animals, including those of swamps and shores, is discussed in 161 pages. The book concludes with a chapter which has been greatly extended by the American authors on the influence of man upon other animals. Were this book merely available as a source of information it would be extremely useful, as it is well supplied with references and fully indexed. Its value lies, however, particularly in the attempt to apply general rules to animal distribution and in its analysis of the fundamental factors. It is a work of great interest and value to the general biologist.

My Garden for September includes articles: 'New Roses of Proved Worth,' 'Gardens in Wiltshire,' 'Bulbs for Autumn Planting,' and 'Making an Anemone Garden.' The coloured plates are of *Bellidiastrum Micheli* and *Campanula barbata*, both natural size.

The Entomologist for August contains 'Further Notes on the Lepidoptera of Cara Island,' by W. H. Dowdeswell; 'Migration Records, 1937,' by Captain T. Dannreuther (large-scale immigration of *Pieris brassicae* accompanied by *P. rapae* continued along the north coast of Norfolk and in East Yorkshire until June 7th. There was a flight of these species at Garton-on-the-Wolds, East Yorkshire, on June 4th); 'On some European Yellow Forms of *P. napi* L. (Lepidoptera, Rhopalocera): a Review of the Literature,' by G. D. Hale, Carpenter, and B. M. Hobby; and several shorter notes and observations.

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 184)

Addendum :

Draba muralis L.

Not in East Riding Flora.

CARYOPHYLLACEÆ—continued

Stellaria Holostea L.

S. palustris Retz. (*glaucæ* With.).

S. graminea L.

var. *latifolia* R. and F., on millstone grit at Adel, Harrogate and Brimham.

S. uliginosa Murray.

Arenaria trinervia L.

A. Stellarioides Willd.

Casual, Elland and Mirfield.

A. Gothica Fr.

Not in East Riding. First record for Great Britain, Ribbleshead, Lister Rothery, 1889. Many places on the track from Selside to Clapham and Austwick. Swaledale—No doubt it occurs somewhere on the limestone plateaux above the Swale. I picked up two or three specimens from the limestone-metalled road near Healaugh, 1906. (Not confirmed 1937, C.A.C.).

A. serpyllifolia L.

var. *viscidula* Roth., wall top, Salterhebble, 1895, H.T.S. spn. ! Doncaster, 1900, H.H.C. spn. !

var. *leptoclados* Guss., Giggleswick Stn. to Settle roadside, J.F.P. ! Keld, Rev. W. Crombie !

A. Peploides L. (*Honkenya* Ehrh.).

Not in West Riding Flora.

A. tenuifolia L.

A. verna L.

Not in East Riding Flora.

var. *hirta* Ledeb. Sent me fresh from Upper Tees by J.F.P. !

Sagina ncdosa Fenzl.

S. subulata Presl.

Not in East Riding Flora.

S. ciliata Fr.

S. procumbens L.

***Spergularia salina* Presl.**

Not in East Riding. North Riding, salt marshes below Grangetown, W.A.S.

***S. rubra* Presl.**

Claytonia spp. Aliens *C. perfoliata* Donn. *sibirica* L. and *virginica* L., have all been recorded, the first named being very plentiful at Spurn.

***Montia lamprosperma* Cham. (*fontana* L.).**

***M. verna* Necker.**

Near source of Cautley Spout Beck, *circa*. 2,000 ft. alt., 1909, Albert Wilson ! Marsh by Adel Beck, a rill from Moortown Blackmoor to north of King Lane Bridge, 1910, P. Palmer !

HYPERICACEÆ

***Hypericum Androsæmum* L.**

A record from Ribblesdale (Sawley Abbey) in *Nat.*, 1894, p. 9. Neither category nor exact locus stated.

***H. montanum* L.**

Grassington, Bastow Wood, 1908, J.F.P. ; East Riding, disused chalk pits, Hessle, C.W., August, 1908.

***H. hirsutum* L.**

***H. pulchrum* L.**

var. *procumbens* Rostrup, Thurstonland, 1909, Miss S. C. Stow and E.A.W.-P. ; Newton-in-Bowland, J.F.P. !

***H. acutum* Moench. (*quadratum* Stokes. and *tetrapterum* Fr.).**

***H. quadrangulum* L. (*dubium* Leers.).**

***H. Desetangsii* Lam.**

Richmond, Yorkshire, R. B. Bowman, sp. Herb, Kew, recognised by C. E. Salmon. Between Low Gill and How Gill, 1900, J. Handley ! and J.F.P., 1902. Not in East Riding Flora.

***H. perforatum* L.**

var. *angustifolium* Gaudin., rail bank near Bardsey, J.F.P. and H.E.C.

***H. humifusum* L.**

***H. elodes* L.**

MALVACEÆ

Althæa hirsuta L.

Casual. Frizinghall, 1888, W.W.

Malva moschata L.

var. *integrifolia* Lej., Pannal, V. Palmer ! Tong Valley,
Pudsey, J.F.P. ; Town-close Hill, Kippax, J.F.P.

M. sylvestris L.

M. rotundifolia L.

M. pusilli Sm., *ægyptia* L., *verticillata* L., *brasiliensis* DC.
Have occurred as aliens.

Hibiscus Trionum L.

Alien. Batley, P.F.L. !

Sida rhombifolia L. and **Abutilon Avicennae** Gaertn.
Olympia sidings, Selby, W.A.S. Aliens.

TILIACEÆ

Tilia tomentosa Moench.

Harrogate and Potternewton. Alien.

T. platyphyllos Scop. (**T. grandifolia** Ehrh.).

Alien. Not in East Riding Flora.

T. europæa L. (*intermedia* DC.).

Planted. Not in East Riding or North Riding Floras.

T. cordata Mill. (*parvifolia* Ehrh.).

LINACEÆ

Radiola Linoides Roth. (*millegrana* Sm.).

Linum angustifolium Huds. and **usitatissimum** L.
Cultivation escapes or Casual.

L. anglicum Mill. (**L. perenne** auct angl.).¹

Seamer Moor towards Boxhill, W.F. ! 1906 ; Scurrill Hill
south of Sherburn ! with E. Bogg, 1906.

L. catharticum L.

GERANIACEÆ

Geranium sanguineum L.

G. nodosum L. Alien.

Geranium versicolor L. (*striatum* L.). Planted.

G. sylvaticum L.

Not in East Riding Flora.

var. *parviflorum* Britting., Mickleton and Winch Bridge, 1909, G.C.D.; Grasswood, 1909, G.C.D.; Dalehead, Bowland, 1912, Miss Peel.

G. pratense L.

var. *eboracense* mihi. A parallel in variation to the *lancastriense* of *G. sanguineum*. Leaves neater, hairier, less complexly cut, the petals lavender-white with fine darker veins, as prominent as in *G. striatum*. Lower Bowland, J.F.P.; Field off Holme Lane, Rigton!; Near Malham, C. E. Salmon, m.s.

G. phæum L. Alien.

G. pyrenaicum Burm. f.

Near Malham, 1835, Hb. Nicholson, Vol. 9, fol. 13; Camp's Mound Park, Askern, H.H.C. and C.W., *Nat.*, 1901.

G. columbinum L.

Top of Coniston 'Dib' Scar, L.R., m.s., J.F.P. ! its highest station.

G. dissectum L.

G. molle L.

var. *grandiflorum* Vis., fields near Spofforth !

G. pusillum L.

The small type *humile*, at Rossington, on sand, abundant, Hb., H. E. Craven! A var. or hybrid, Knaresborough, J.F.P., 1902, two feet high, radical leaves almost circular, hairs on stem almost wanting, slightly emarginate petals, seeds not netted.

G. lucidum L.

G. Robertianum L.

Erodium cicutarium L'Hérit.

E. moschatum L'Hérit. Denizen.

E. Botrys Bert., *cygnorum* Nees, *Manescavi* and *romanum* Ait., have all been recorded as aliens.

Tropæolum majus L. Casual.

Limnanthes Douglasii Br. Alien.

Oxalis Acetosella L.

O. corniculata L. Alien.

Impatiens Noli-tangere L.

Alien or Denizen.

I. parviflora DC.

Not in North Riding Flora. Well established on banks of Calder, P.F.L.; Greta banks, Burton-in-Lonsdale, 1917, A. Wilson.

I. glandulifera Royle.

Colonising readily and with success where flood-borne to unoccupied ground on river banks.

I. biflora Walter. (*fulva* Nutt.). Alien.

AQUIFOLIACÆ

Ilex Aquifolium L.

var. *laurifolia* Lej., occasionally planted.

CELASTRACEÆ

Euonymus europæus L.

RHAMNACEÆ

Rhamnus Frangula L.

R. catharticus L.

Between Tarn and Cove, Malham, 1,100 ft., W.W.; Cross-gates, Hb. H.E.C.; Kettlewell; Dunnaw Cliff, Newton, J.F.P.

Staphylea pinnata L. Introduced.

HIPPOCASTANACEÆ

Æsculus Hippocastanum L. Denizen.

Æ. Pavia and **glabra.**

Planted occasionally.

ACERACEÆ

Acer Pseudo-Platanus L.

A. striatum L. Planted.

A. campestre L.

Our form is *hebecarpum* (as Loudon pointed out prior to 1840), but the form with smooth samara *leiocarpum* Wallr. does occur; Burton Leonard, J. Farrah!

LEGUMINOSÆ

Laburnum vulgare Presl. and **alpinum** Presl.
Have occurred in many places.

Genista anglica L.

G. tinctoria L.

Ulex europæus L.

var. ? *vel* forma *hiemalis*., Bramhope just coming into bloom, November 1st, 1908, J.F.P. ! I think this hiemal race may be a cross with *Gallii*.

U. Gallii Planchon.

Not in East Riding Flora.

U. minor Roth. (*nanus* Forst.).

Not in East Riding. Recorded from North Riding, Thorntondale, R.J.F. and J. Green, *Nat.*, 1924, p. 356.

Cytisus scoparius Link.

Robinia Pseudo-Acacia L. Alien.

Ononis repens L. (*arvensis* Auct.).

var. *horrida* Lange., Midge-hall sidings, 1900, H.H.C.

O. spinosa L.

Trigonella. The following species have occurred as Aliens :—*ornithopodioides* DC., *Fænum-græcum* L., *gladiata* Stev., *monspeliaca* L., *hamosa* L., *arabica* Del. (*spinosa*), *corniculata* L., *polycerata* L., *monantha* Meyer., *radiata* Boiss. (*Pocockia*), *laciniata* L., *aurantiaca* Boiss., *cærulea* Ser.

Medicago lupulina L.

var. *scabra* Gray. Occasional, a sort of Casual.

Medicago. Many species have been noted as Aliens, including :—*falcata* L., *hispida* Gaertn., *apiculata* Willd., *obscura* Retz., *disciformis* DC., *rigidula* Desr., *truncatula* Gaertn., *laciniata* Miller., *hirsuta* All., *tribuloides* Desr., *Echinus* DC. (*intertexta* of Flora), *prostratum* Burm. fil.

Melilotus altissima Thuill. Colonist.

M. arvensis Willd. Alien.

M. indica All. (*parviflora* Desf.).

Alien. Not in North Riding Flora.

M. alba Desr.

Alien. Not in North Riding Flora.

Trifolium medium L.

var. *intermedium* mihi., an upland form which cannot be a hybrid as it grows by itself in 'wild' situations, leaflets lack the dark V, are bluntly round oval, not elliptically acute; hue of heads a dull crimson. It is intermediate and seems to deserve distinction.

T. pratense L.

T. incarnatum L., *purpureum* Lois., and *pallidum* Desr. are fodder aliens.

T. arvense L.

T. scabrum L.

T. striatum L.

T. fragiferum L.

T. glomeratum L., *resupinatum* L., *spumosum* L., *tomentosum* All., *hybridum* L., have all occurred as Aliens.

T. repens L.

var. *rubescens* Ser. (*Townsendii* Bab.) has occurred as an alien.

T. procumbens L.

T. dubium Sibth. (minus Relhan).

The var. *pygmaeum* Soy.-Wil. deceptively approaching *T. filiforme* L.

T. agrarium L. occurs as a casual.

Anthyllis Vulneraria L.

var. *maritima* (Schweiz) Koch. This striking variety with silky-hoary leaves, fleshier for the salt-spray and pure yolk-yellow corolla, I have once seen on a sheltered south-facing cliff slope over Saltwick Nab, Whitby, 1901: it may be only a state.

Lotus Tetragonolobus L. Alien, Mirfield. P.F.L.

L. uliginosus Schk.

L. corniculatus L.

L. tenuis W. and K.

Astragalus glycyphyllos L.

A. danicus Retz. (*hypoglottis* Auct.).

A. bœticus L. and *sesameus* L.

Aliens, Mirfield and Halifax.

Scorpiurus sulcata L. and **S. subvillosa** L.

Aliens in the heavy woollen district.

Coronilla varia L.

Alien, but persisting and established at Ravensthorpe, Tag-Lock, and Shepley Bridge.

C. scorpioides Koch.

Has also occurred at Hull and Mirfield. P.F.L.

Ornithopus perpusillus L.

Bessacar, Rossington, Hb. Craven ! Old quarries East of Doncaster, W. West.

Hippocrepis comosa L.

Added to East Riding flora by Rev. and Miss Purchas from Langton Wold near Grimston. J.F.R. Herb !

H. unisiliquosa L. Alien, Mirfield.

Onobrychis viciæfolia Scop. (**sativa** Lam.).

Vicia sylvatica L.

V. Cracca L.

var. *incana* Thuill. is recorded from Thirsk, Foggitt and Pugsley, *Naturalist*, 1935, p. 67.

V. Pseudo-Cracca Bert., *V. narbonensis* L., *Faba* L., *atropurpurea* Desf., *melanops* Sibth. and Sm., *pannonica* Cr., *varia* Host., *villosa* Roth., *amphicarpa* Dort., and *peregrina* L. have all occurred as aliens.

V. bithynica L.

North Riding flora only. Runswick Bay, Y.N.U. meeting. *Nat.*, 1909, p. 312.

V. sepium L.

var. *ochroleuca* Bast. Gibb's Wood, Newton-in-Bowland, 1895, J.F.P. Pointed out by G.C.D. to writer and party in 1909 at Mickleton ! and Newbiggin ! (Durham). Another form, *gracile*, found by P.F.L. S.W. of Thornhill Edge may prove to be the *V. montana* Froelich *in litt.*

V. lutea L., *hybrida* L., *monanthos* Desf., and *Ervilia* Willd. have also been seen.

V. angustifolia (L.) Reichard.

V. Lathyroides L.

V. hirsuta (L.) S. F. Gray. Colonist.

V. tetrasperma (L.) Moench.

(To be continued)

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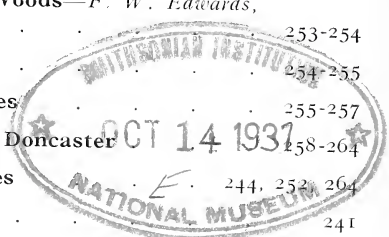
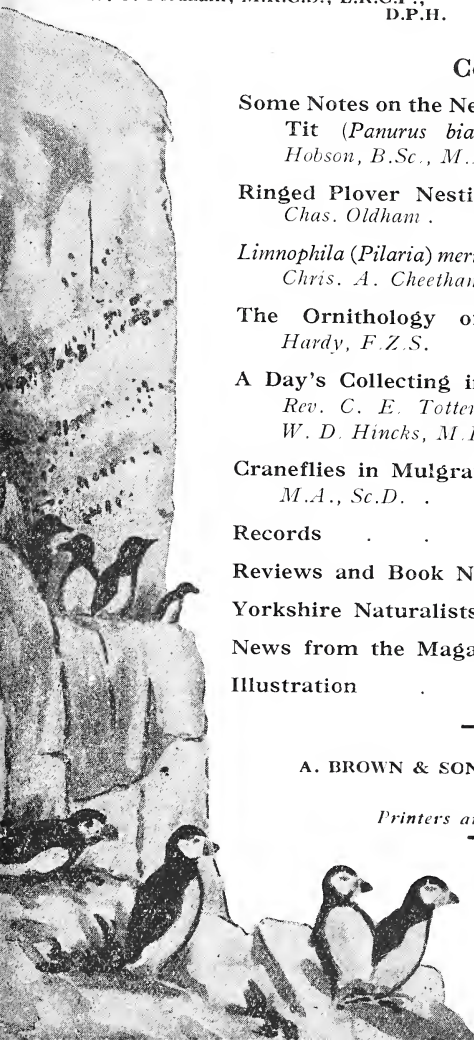
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YORKSHIRE NATURALISTS' UNION

BOTANICAL SECTION

THIS Section will meet on Saturday, October 9th, at 3 p.m., in the Botanical Department of Leeds University.

The Baines Door (in University Road below the main entrance) will be open from 2 p.m. to 3-30 p.m. The meeting will be in Room 29, and after tea in the Museum there will be exhibits in the Botany Research Laboratory.

Business.—Adoption of Annual Report and nomination of officers and committees for the coming year.

CHRIS. A. CHEETHAM,
Hon. Secretary, Y.N.U.

VERTEBRATE SECTION

TWO MEETINGS will be held in the Library of the Church Institute, Albion Place, Leeds, on Saturday, October 16th, 1937, at 3-15 and 6-30 p.m.

At 3-15 p.m., to consider and pass (a) Sectional Reports for 1937 and to elect officers for 1938; (b) the General and Financial Reports of the Yorkshire Wild Birds and Eggs Protection Acts Committee for 1937, and to recommend this Committee for 1938; (c) the Reports of the Yorkshire Mammals, Amphibians, Reptiles and Fishes Committee for 1937, and to recommend this Committee for 1938.

The following papers will be given:—

‘The Status of the Anatidæ in Yorkshire,’ by the Hon. Secretary.

‘Some Experiments in the Culture of Roach’ (illustrated), by S. H. Smith, J.P., F.Z.S.

‘Notes on Teal, Marsh Warbler and Corn Bunting’ (illustrated), by R. Chislett, F.R.P.S., M.B.O.U.

‘Nature Photography in Colour,’ by F. J. Forrest.

Members and Associates are cordially invited to attend and to bring notes, specimens and lantern slides. Will Officers of Affiliated Societies kindly notify their members?

11 The Avenue,
Clifton, York.

E. WILFRED TAYLOR,
Hon. Secretary.

ENTOMOLOGICAL SECTION

THE Annual Meeting of the Section will be held at Leeds in the Church Institute, Albion Place, on Saturday, October 23rd.

At 3 p.m. the meeting will open with an exhibition of specimens at which members and visitors are asked to contribute. The evening session (commence 6 p.m.) will be devoted to Records’ reports and elections.

W. D. HINCKS, *Hon. Sec.*,
46 Gipton Wood Avenue,
Leeds, 8.

Myosotis alpestris on the limestone turf of Little Fell, Teesdale.



SOME NOTES ON THE NESTING HABITS OF THE BEARDED TIT (*PANURUS BIARMICUS* L.)

W. HOBSON, B.Sc., M.B.CH.B., M.R.C.S., L.R.C.P.

AMONG the rare birds which breed on the Norfolk Broads none is more interesting than the Bearded Tit (*Panurus biarmicus* L.). This is a charming little bird, with rufous



Male Bearded Tit feeding young with Caterpillar (showing photographer's right hand; the left being used to operate the shutter of the camera).

brown back and tail, and conspicuous black cheek marks. Its large fanshaped tail has earned it the local name of Reed Pheasant. At one time this bird was in danger of extinction from egg collectors. Under the protection now afforded it in Norfolk, it can now be stated to be quite common in certain parts, often rearing two or three broods a year. No fewer than seventeen nests were discovered on one particular Broad this year.

In its choice of nesting sites the bird is most fastidious and seems to find difficulty in survival unless strictly protected.

Thus in a neighbouring Broad where the reeds have been cut, the bird has entirely disappeared. Even in places which seem eminently suitable to it, it will not stay long and many parts of the Broads contain no Bearded Tits at all. Again, the birds may return year after year to one particular stretch of reeds and yet the surrounding reeds are completely deserted. An interesting experiment was tried some years ago of releasing several of these birds at Hornsea Mere in Yorkshire. They returned once or twice but very soon disappeared, despite the fact that the type of country seemed ideal and complete protection was afforded.

The bird places its nest low down in the dense tangle of reed and sedge which fringes many of the Broads; the area occupied by the birds is soon apparent, the birds flying unconcernedly about their business soon reveal it, but the actual site of the nest is cunningly concealed and can best be found by careful observation of the male bird bringing food to the female or to the young. As one waits for the birds to return to the nest, there are other interesting birds to be heard and seen. The deep reverberating boom of the Bittern issues from a neighbouring reedbed, or the awe-inspiring groan of the Water Rail, while planing gracefully over the reed tops goes a Marsh or Montague Harrier.

One pair of Bearded Tits which I had under observation this spring, formed a most interesting example of how behaviour can alter in a bird. While the eggs were being brooded the male was most shy and retiring, but as soon as the eggs were hatched, involving the increased task of bringing food to the young, then this shyness disappeared. It was as though the bird was so busy with feeding young that he had no time to bother about a mere mortal. This particular bird was so fearless that the photographs were taken without the aid of a hide. The male came to the nest with food, usually insects and grubs, at intervals of about five minutes. He could be seen threading his way through the herbage, quite unconcerned with the presence of a human being near the nest and off he went away again for more food. The female came to the nest, less frequently, usually at intervals of ten to fifteen minutes, but she usually brought more food. This went on the whole day through, ceaselessly and untiringly, small wonder then that the young birds grow so rapidly, and so when I came to photograph the young they were ready to fly and the male bolder than he had ever been. The female was a little shyer than the male, but nevertheless would come to the nest, with a camera tripod and photographer standing only three feet away. In order to obtain photographs of both birds at the nest at the same time, attempts were made to keep the male away until the female arrived with

food, this was successful once or twice, but soon he actually hopped over the photographer's hand to feed the young ; this action was done without any hesitation and in the most fearless manner possible. The photographer was faced with the amazing sight of a wild Bearded Tit perched on his hand. The placing of a handkerchief round the back of the nest had no effect in keeping the bird away, it merely treated the handkerchief as part of the nest and quickly jumped over it to feed the young.

One felt that the bird was not of necessity bold, but that there was supreme confidence, and yet the next day the whole behaviour of the bird changed. One of the young flew from the nest and from then onwards the male became most timid and jumpy. His fearlessness had gone and no longer would he come to the nest in the bold manner in which he had approached previously. The author has observed the Bearded Tit at the nest upon numerous occasions but never has a bird shown such confidence as in the case of this one.

RINGED PLOVER NESTING INLAND IN LANCASHIRE

CHAS. OLDHAM

DR. BEDFORD'S account of the Ringed Plover nesting in places away from the sea (*ante* pp. 219-222) reminds me that seventeen years ago I came across some breeding birds in the valley of the Lune, some miles above any tidal influence. I have had no opportunity to visit the place again, but it seems likely enough that the birds still nest there. On June 21st, 1920, there were half a dozen pairs on a big bank of coarse gravel, washed out of the glacial till and deposited by the river in flood-time, opposite Tunstall, some two miles above Arkholme, and eleven in a bee-line above Lancaster. It was evident that the birds were nesting, and after some watching I located a brood of newly-hatched young. Another bird, at some distance from the pair with the chicks, squattered along the ground, rolling on one side in characteristic Ringed Plover fashion, and was obviously interested in some young ones, but I had not time to hunt them down. Some of the other birds were engaging in courtship antics ; possibly they had been frustrated in their attempts to nest by the storm and floods of three weeks before. On another gravel bank at Arkholme, just below the junction of the Lune and Greta, I watched a pair for an hour. No young were to be seen and during that time neither of the birds settled on a nest, but their anxiety whenever I moved suggested that they were nesting there.

LIMNOPHILA (PILARIA) MERIDIANA STAEG. IN YORKSHIRE

CHRIS. A. CHEETHAM

ON September 20th I collected a few insects on Frostrow Fell, Sedbergh, and amongst them I found a Limnobid that seemed new to me, at the same time the venation of one wing was incomplete, the cross vein which closes the discal cell being absent.

I sent the specimen to Dr. F. W. Edwards, who identified it as *Limnophila meridiana* Staeg. With it were two other Limnobids of a similar size, *Erioptera trivialis* Mg. and *Amalopsis immaculata* Mg., and two Tipulids which are generally to be found in marshy places on the hills in September, *Tipula melanoceros* Schum. and *Tipula luteipennis* Mg., the latter varying very much in size, some specimens being quite half as long again as others. This variation seems to be always present where *luteipennis* is found in fair quantity.

Growing in the streamlets amongst the boggy pools was a form of the Bladderwort (*Utricularia*), which appeared at first sight to be *Utricularia intermedia* Hayne. The plants were rooted in the soft mud and the floating leaves appeared to be devoid of bladders, whilst on pulling up the plant the bladders were very numerous on the rooting portions. However, on careful examination it was evident that a few bladders were present on the floating leaves and odd leaves were amongst the submerged bladders. Dr. W. A. Sledge, who has seen the plant, suggests that it is certainly not *intermedia* and that he should call it *minor*. It should be noted in successive seasons if possible.

The Entomologist's Record for August contains 'Autumnal Lepidoptera in Kurdistan: Preliminary Notes on Some Excursions in the Rowanduz Chai Valley, Iraq,' by E. P. Wiltshire (with plate); 'Some Notes on Assembling Moths,' by P. B. M. Allan; 'Variations of *Eumenis allionii* G.—H. = *fatua* Freyer,' by R. Verity; 'Notes on Collecting, etc.,'; 'Current Notes'; and supplement, 'The British Noctuae and their Varieties,' by H. J. Turner.

The Entomologist's Monthly Magazine for August contains 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; '*Philonthus jurgans* nov. sp., an addition to the British List of Coleoptera,' by the Rev. C. E. Tottenham (allied to *varians*). Localities include Skipwith Common, Leeds, and East Ardsley, Yorkshire; Castle Eden, Durham; and Timperley, Cheshire; 'Notes on the Biology of *Hydrotrepes balnearius* (Helotrephidæ, Hemiptera-Heteroptera),' by R. L. Usinger; 'Two new genera and species of aphids found in Egypt,' by L. B. Soliman; 'Notes on Syrphidæ (Diptera) II,' by J. E. Collin (the genus *Sphegina*, *S. chunipes* Flin. common and widely distributed, especially in Scotland; *S. kimakowiczi* Strobl. from Cambridgeshire, Herefordshire, Warwickshire, and Radnorshire; *S. verecunda* sp. nov. from Radnorshire and Herefordshire); 'Siphonaptera recorded from the Pacific Islands,' by G. B. Thompson; 'The Asparagus Fly *Platyparea poeciloptera* Schr. (Diptera, Trypetidæ), in England,' by A. S. Buckhurst (Hertfordshire); and several shorter notes.

THE ORNITHOLOGY OF MERSEYSIDE, 1936

ERIC HARDY, F.Z.S.

(Continued from page 216)

LITTLE OWL.—During the winter afternoons one was regularly mobbed by small birds at Allerton, Liverpool; two were shot at Hale (Lancs.) in November and Mr. French saw one disturbed during a shoot at Altcar early in December. I found birds at Thornton-le-Moors, Mr. C. H. Gowland told me of a pair nesting at Shotwick and Mrs. Smith (L.N.F.C.) found a pair at Willaston. These were all we noted for the B.T.O. Survey. The species is still rare with us and only slowly colonising Wirral and West Lancashire.

WOOD PIGEON.—Increased numbers in the winter 1936-7. Counts I made of birds using Mull Wood, Croxteth Park, the biggest pigeon roost in these parts, were one-third bigger than last winter's counts at the same place, and three times the summer nesting population.

TURTLE DOVE.—I saw a late one, Knowsley Park, October 31st. This bird continues to increase in our area. Miss Medcalf verified it for the first time at Aughton, May 17th, although it had been reported in 1934 and 1935.

PUFFIN.—After the big gale on October 18th, we saw two flying past the Red Rocks, Hoylake, at a joint meeting of the L.N.F.C. Ornithological Section and the Manchester Branch B.E.N.A. They are very scarce so close to Cheshire and Mr. W. Wilson, of West Kirby, and the keeper at Hilbre Island, had not seen them by the Red Rocks before, although they had seen them off Point of Air and the Swash, on the Welsh side of the estuary.

COMMON or ARCTIC TERN.—Miss Medcalf saw one fishing the canal at Aughton, August 16th.

LITTLE TERN.—Many in the Dee Estuary in August. Mr. M. C. Wainwright, of Hoylake, told me it was an unusually heavy passage.

BLACK-HEADED GULL.—Only one nest at Liverpool Sewage Farm, built of *Polygonum persicaria*, which is very abundant.

LESSER BLACK-BACKED GULL.—With Lord Sefton's keeper, Mr. Taylor, I watched a dozen pairs nesting on Simmonswood Moss, where a new colony has been formed. On January 21st I saw what appeared to be the Scandinavian sub-species on Wavertree Playground, also at Knowsley Park October 3rd, while a specimen the same day at the Sewage Farm seemed more like the British sub-species, which had been at Knowsley Park Lake until September 19th.

SNIFE.—In an acre of Liverpool Sewage Farm marsh, February 17th, I counted 67 common snipe and one jack;

in the autumn the farm workers stated there were more snipe than they had known before. I saw a dark Sabine's variety there March 21st and Mr. W. French saw a specimen frequently in October. On October 3rd I counted 126 feeding on half an acre of marshland.

AVOCET.—There were reports from two sources that a party of avocets was at Burton Marshes on the Dee in August, but none of us saw them. There is no previous Cheshire record.

OYSTER CATCHER.—I showed the first nesting in Cheshire—a pair on the sand and shingle of the Mersey shore at Mount Manisty, by the Ship Canal—to a party of the Liverpool Naturalists' Field Club, May 24th (*British Birds Magazine*, June).

RUFF.—One, Liverpool Sewage Farm, March 7th, on March 21st I saw a party of eight by the lake on the West Derby half of the Sewage Farm, an unusual number for the spring passage, so I took Mr. W. French, who lives nearby, to verify the record. While we were watching them two of the birds attempted mating, although no bird could be seen with the nuptial ruff. On April 18th I saw one bird with the nuptial ruff partly developed, and three reeves. On September 18th, Mr. French saw two ruffs.

GREENSHANK.—Mr. W. French saw four at Liverpool Sewage Farm, September 18th.

LITTLE STINT.—Mr. French saw one at Liverpool Sewage Farm, September 18th.

KNOT.—In a flock in the Dee Estuary on October 18th, I watched one still in fawn-brown summer plumage and pointed it out to members of the L.N.F.C., etc., present.

GREEN SANDPIPER.—Mr. French saw four at the Liverpool Sewage Farm, August 3rd, six on August 11th, and one on the 27th.

CURLEW SANDPIPER.—I saw one at the Dee Estuary, off Hoylake, August 15th, and Mr. French saw one at the Liverpool Sewage Farm, September 18th, a day of a very marked and varied passage of waders.

COMMON SANDPIPER.—A pair found in the breeding season near the pumping station, Rufford, but nest not located.

REDSHANK.—Daily counts I took on a stretch of the Mersey shore showed an increase the first week of March, suggesting a movement, and on the 3rd there were 167 below Dingle Oil Jetty and 143 dunlin near by.

GOLDEN PLOVER.—The main spring migration was in the second week of April, I counted 42 with full black underparts at Liverpool Sewage Farm, April 4th, and 449 on April 18th.

GREY PLOVER.—Mr. M. C. Wainwright told me he saw one in the Dee Estuary on July 30th, an early date.

CURLEW.—Two pairs nested on Simmonswood Moss, near Liverpool, where I watched them in company with Mr. Taylor, Lord Sefton's gamekeeper.

GREY GEESE.—I saw four at Knowsley Park, October 31st, making to the great lake but turning off when they sighted me. With Mr. French, I set up two at close quarters from Liverpool Sewage Farm, March 21st, probably pink-foots.

CANADA GOOSE.—This alien, now widespread in south-west Lancashire, successfully nested on Kirkby Dam, and photographed on the nest by Mr. J. S. Taylor, of the L.N.F.C.

SHELDUCK.—About fifty pairs nested on the Mersey banks at Stanlow and Manisty, twelve miles inland, where they are increasing. Flock of 71 in Dee Estuary January 8th (W. Wilson).

GADWALL.—I got very near to one on the lake on the West Derby half of Liverpool Sewage Farm on March 7th and a second bird with it which got up with it when disturbed might have been the same species, but I was sure only about the first.

SHOVELLER.—Mr. C. H. Gowland told me he found a pair nesting at Burton Marsh, Cheshire, the duck sitting on ten eggs in March. There was a big migration the second week of February and out of 551 duck of seven species I counted on the big lake in Knowsley Park, Lancashire, 121 were shovellers. By March the number of shovellers on the lake had fallen to thirteen.

TEAL.—There were fewer than for many winters on the Liverpool Sewage Farm Lake and they were later in coming, although on the Dee, Mersey, at Knowsley Park, etc., the 1936-7 winter was very good for duck.

WIGEON.—There was an unusually large flock of the Dee Estuary in February.

GARGANEY.—Two small duck reported to me on April 4th by workers at Liverpool Sewage Farm, where the common teal is very numerous, were seemingly garganey, but I did not see them.

TUFTED DUCK.—15 pairs nested in Knowsley Park, an increase of one on 1935.

SCAUP.—A pricked female wintered 1935 and spent up to November, 1936, on the small lake in Botanic Park, in the midst of industrial Liverpool, where I took photographs of it and showed it many visitors. Normal specimens visited Meols Pond, Wirral, up to April and November.

LONG-TAILED DUCK.—Two were reported to me from West

Kirby Marine Lake in January by the late Mr. R. D. Brown. Pair in summer plumage feeding on green crabs, West Kirby Marine Lake, May 20th (W. Griffiths).

SCOTER.—I saw one inland on the big lake in Knowsley Park, December 12th.

RED-BREASTED MERGANSER.—When I was at Hoylake, on October 17th, Mr. W. Wilson told me there were three in the Dee Estuary, and next day, with a joint meeting of the L.N.F.C. and Manchester B.E.N.A. we got a good view of one of them.

SMEW.—I watched a drake and duck on the lake in Knowsley Park, February 1st. I saw one there in January, 1934, which was the sixth reported in Lancashire in the past fifty years.

STORK.—Apropos the ringing experiments with imported white storks, two birds appeared in a sheep field in Knowsley Park, on September 17th and were reported to me by Mrs. Aindow, wife of the boathouse keeper. Presumably they were birds Lord Mansfield put down in Dumfriesshire and which were reported from Lytham.

CORMORANT.—Unusually numerous inland in the winter of 1936-7. I saw four immature birds on the big lake in Knowsley Park frequently in September, the boathouse keeper saying it was the largest number he had known at one time. The number lessened, but one bird remained all winter. Another wintered on Carr Mill Dam, St. Helens, where I showed it to members of the L.N.F.C. As usual, they were frequently seen perched on the transporter bridge at Widnes.

FORK-TAILED PETREL.—On October 18th, after a big gale, we saw five flying over various parts of the Dee Estuary off Hoylake and Hilbre and later when standing with the keeper above Hilbre lifeboat slip, watched a bird settle on the sand by the edge of the water until mobbed by gulls.

STORM PETREL.—Mr. French picked up one dead on Freshfield shore, November 15th.

GREAT CRESTED GREBE.—A pair summered on a flash near Parr. Later one visited Meols Pond, Wirral, and was seen by Mr. G. Rodinson.

BLACK-NECKED GREBE.—The late Mr. R. D. Brown reported one from West Kirby Marine Lake, in January, and Mr. W. Wilson saw one September 1st.

RED-THROATED DIVER.—On March 17th I watched one in the Mersey off Aigburth shore and later in Tranmere Bay at high water. The species is rarely found so far from the estuary.

A DAY'S COLLECTING IN THE DONCASTER DISTRICT

REV. C. E. TOTTENHAM, M.A., F.R.E.S., AND W. D. HINCKS,
M.P.S., F.R.E.S.

GENERAL collecting during June and July had proved so unproductive that when we joined the Yorkshire Naturalists' Union meeting at Doncaster on Monday, August 2nd, we decided to confine our attention to the water-beetles of the district. With this end in view we did not accompany the main party to Sprotborough, but followed an independent route, visiting Potteric Carr, Wadworth Carr, Everton (Notts.) and Misterton (Notts.). At each of these localities, with the exception of Everton, we made collections of water-beetles and our results are tabulated below.

The total number of water-beetles captured was 1,206, comprising no less than 62 species, of which only 11 were common to all three localities. The last fact is perhaps less surprising than would appear at first sight when the physical differences between the localities are taken into account. If the stagnant water collections from Potteric Carr and Misterton are compared, twice the number (23) of species common to both localities occur, a total which, nevertheless, indicates considerable differences between the two habitats. Further comparison of these two collections shows that four species in either case account for approximately half of the specimens collected. The Potteric Carr collection has 225 out of 525 specimens of *Hydroporus palustris*, *H. erythrocephalus*, *Haliplus confinis*, and *Hydroporus pictus*, whilst Misterton yielded 285 out of 489 specimens of *Hydroporus palustris*, *erythrocephalus*, *dorsalis*, and *Haliplus ruficollis*.

A few points of interest on the individual collections are indicated below.

POTTERIC CARR.—The locality worked here consisted of drains on either side of the railway line containing much vegetation and having more or less stony bottoms. A total of 525 specimens of 44 species were obtained. The proportion of *Haliplus confinis* as compared with the other *Haliplidae* and the general total of insects is rather unusual, but it should be noted that almost the whole gathering occurred in a small area and was obtained in one or two dips of the net. Another striking feature is the occurrence of *I. obscurus* as high in order of abundance as ninth. Still more noticeable is the comparative scarcity of such beetles as *Agabus bipustulatus*, *A. sturmi*, *Helophorus aeneipennis*, and *Hydroporus pubescens*. *Hydroporus lepidus* is perhaps worthy of special mention as

it seems to have entirely different habits in different parts of the country ; in Dorset it is abundant in a shallow flowing stream by the roadside with a stony bottom and practically no vegetation.

LIST OF AQUATIC COLEOPTERA ¹

NAME	Potteric Carr	Wadworth Carr	Misterton	NAME	Potteric Carr	Wadworth Carr	Misterton
HALIPLIDÆ.				<i>I. subæneus</i> Er. ...	—	—	1
<i>Haliphus confinis</i> Steph.	39	—	—	<i>I. ater</i> De Geer. ...	1	—	—
<i>H. obliquus</i> F. ...	3	—	—	<i>I. obscurus</i> Marsh. ...	20	—	3
<i>H. lineatocollis</i> Marsh.	10	24	—	<i>Rantus grapii</i> Gyll. ...	1	—	2
<i>H. ruficollis</i> De Geer.	27	1	58	<i>R. exoletus</i> Forst. ...	—	—	1
<i>H. fluviatilis</i> Aube ...	1	—	—	<i>R. pulverosus</i> Steph.	1	—	1
<i>H. immaculatus</i> Gerh.	2	—	—	<i>Colymbetes fuscus</i> L....	9	6	—
<i>H. fulvus</i> F. ...	—	—	1	<i>Dytiscus semisulcatus</i> Müll. ...	1	5	—
DYTISCIDÆ.				GYRINIDÆ.			
<i>Noterus clavicornis</i> De Geer. ...	—	—	16	<i>Gyrinus natator</i> L. ...	17	5	—
<i>Laccophilus variolosus</i> Hbst. ...	2	—	2	<i>G. marinus</i> Gyll. ...	2	—	—
<i>Bidessus geminus</i> F. ...	—	—	1	HYDROPHILIDÆ.			
<i>Hyphyodrus ovatus</i> L.	1	—	—	<i>Hydrobius fuscipes</i> L.	8	6	10
<i>Hygrotus inæqualis</i> F.	5	—	27	<i>Philydrus frontalis</i> Er.	3	—	—
<i>Cælamбус impresso-punctatus</i> Sl. ...	7	—	9	<i>Cymbiodyta marginella</i> F. ...	—	—	2
<i>Deronectes 12-pustulatus</i> F. ...	1	—	—	<i>Anacæna globulus</i> Pk.	26	8	—
<i>Hydroporus pictus</i> F.	79	—	1	<i>A. limbata</i> F. ...	3	5	—
<i>H. granularis</i> L. ...	—	—	9	<i>Helochares lividus</i> Fo.	—	—	1
<i>H. lepidus</i> Ol. ...	3	—	—	<i>Laccobius nigriceps</i> Th.	—	1	—
<i>H. lineatus</i> F. ...	3	—	11	<i>L. alutaceus</i> Th. ...	15	—	—
<i>H. dorsalis</i> F. ...	—	—	106	<i>L. minutus</i> L. ...	—	—	2
<i>H. tristis</i> Payk. ...	—	—	2	<i>L. biguttatus</i> Gr. ...	1	—	8
<i>H. angustatus</i> Sturm.	1	—	9	<i>Berosus luridus</i> L. ...	23	—	—
<i>H. gyllenhali</i> Schdte.	—	—	1	<i>Limnebius truncatellus</i> Sb. ...	1	2	1
<i>H. palustris</i> L. ...	58	1	48	<i>L. papposus</i> Mt. ...	—	1	1
<i>H. erythrocephalus</i> L.	49	1	73	<i>Megaleophorus æqualis</i> Th. ...	—	2	—
<i>H. pubescens</i> Gyll. ...	5	—	2	<i>Helophorus æneipennis</i> Th. ...	5	5	4
<i>H. planus</i> F. ...	19	8	16	<i>H. minutus</i> F. ...	14	9	22
<i>H. tessellatus</i> Drap. ...	—	2	—	<i>Atractelophorus brevipalpis</i> Bd. ...	25	46	26
<i>Platambus maculatus</i> L. ...	—	17	—	<i>Hydrochus elongatus</i> Sl.	10	—	—
<i>Agabus nebulosus</i> Forst.	2	2	1	<i>Ochthebius impressus</i> Mm. ...	2	—	1
<i>A. didymus</i> Oliv. ...	—	2	—				
<i>A. sturmi</i> Gyll. ...	1	—	—				
<i>A. bipustulatus</i> L. ...	9	18	10				
<i>Ilybius fuliginosus</i> F.	10	15	—				

¹ The nomenclature of the list as regards the families Haliplidæ, Dytiscidæ, and Gyrinidæ is that of F. Balfour-Browne, published in a series of interesting papers in the *Entomologists Monthly Magazine* (1934-1936). For the Hydrophilidæ, Sir T. Hudson Beare's Catalogue of the recorded Coleoptera of the British Isles (1930) is followed.

WADSWORTH CARR.—192 specimens of 24 species were obtained from a small sluggish stream with abundant vegetation and muddy bottom. It is of interest that after *Haliphus lineatocollis* and *Helophorus aeneipennis* the next three dominant species were large beetles (*Agabus*, *Platambus*, and *Ilybius*), and also that the ratio of species to specimens in this locality was greater than elsewhere.

MISTERTON (NOTTS.).—Our collection was obtained from a pond near the River Idle. The volume of water was considerably reduced by the dry weather and the pond was unpleasantly odorous. The bottom consisted of fine black mud and a considerable vegetation flourished at the points where quantities of water-beetles occurred. As in the other localities, the vegetation was of a quite distinct type. 489 examples of 36 species were obtained. The most interesting species was *I. subaeneus*, an addition to the Nottingham county list and hitherto regarded as restricted to the Fens. The presence of *Noterus* adds to our list another Fen species also found at Askham Bog. *B. geminus* is an interesting species and *Hydroporus granularis* is important as establishing the species definitely from Nottinghamshire in view of the recent discovery¹ that a good number of *granularis* records from various localities have proved to be referable to *H. bilineatus*. We understand from Prof. Balfour-Browne that several of our captures from this locality are additions to the Notts. county list, but in the absence of further details we are unable to specify them.

OTHER INSECTS

With regard to our other captures there is very little worth saying. About 400 examples were captured, mostly from a heap of cut grass near Everton (Notts.). This locality was visited in order to see whether we could discover *Philonthus rectangulus* Sharp and *P. jurgans* Tottenham in Nottinghamshire. Three examples of the first species were obtained, which is, therefore, an addition to the county list. Since *P. rectangulus* was first recorded (Tottenham, 1935) its introducer has found it in great abundance at Burgess Hill (Sussex E.) and at Castle Eden (Co. Durham), commonly at East Ardsley (S.W. Yorks.), and at Leeds (M. Yorks.); also at Boroughbridge (M. Yorks.), Chichester (W. Sussex), Skipwith (S. Yorks.), Cusop (Hereford), and Bow Street (Cardigan). At the first four places mentioned it was in rubbish heaps in private gardens, in which situations it occurred when first found. There can be little doubt that it

¹ Balfour-Browne, *Entomologists Monthly Magazine*, 73, 1937 : 89.

occurs all over England, and in view of the fact that Mr. Edmonds has found a specimen taken by his father at Totnes, Devon, forty years ago, this species must have been overlooked.

The sweeping net yielded practically nothing. A single *Donacia versicolore*a occurred on Wadworth Carr, where *Mantura rustica*, *Psylliodes napi*, *Amara aulica*, and *Nanophyes marmoratus* were also taken. The last also occurred on Potteric Carr. A single example of the interesting aquatic weevil, *Phytobius comari* occurred at Misterton.

We were accompanied on this excursion by Messrs. Bayford and Wood, and the former has been kind enough to furnish the following list of his captures with the sweeping net at Potteric Carr and Wadworth.

COLEOPTERA

Cercyon unipunctatus L., *Tachyporus chrysomelinus* L., *T. obtusus* L., *Coccinella bipunctata* L., *Rhizobius litura* F., *Coccidula rufa* Hbst., *Rhagonycha fulva* Scop., *Chrysolina polita* L., *Phaedon tumidulus* Germ., *Sphaeroderma testaceum* L., *Apion apricans* Hbst., *Otiorrhynchus singularis* L., *Nanophyes marmoratus* Goetz.

HOMOPTERA

On Loversall Carr a few specimens of *Tettigonia viridis* were seen, while *Philaenus spumarius*, type form and varieties, and *P. campestris* were in the utmost profusion.

The Entomologist for September contains 'A New Aberration of *Neuronina popularis* Fab. (Lep. Noctuidæ),' by E. A. Cockayne (with plate); 'A New Species of Lamproniadæ (Microlepidoptera) from Ireland,' by E. Meyrick (*Mnesipatris filicivora*); 'Note on *Mnesipatris filicivora* Meyr.,' by B. Beirne; '*Phalonia gilvicomana* Zeller: its History as a British Species, with Notes on its Foodplant and Larva,' by W. G. Sheldon; 'Migration Records, 1937,' by Capt. T. Dannreuther; '*Diacrisia lubricipeda* ab. *edelsteni* ab nov. (Lep. Arctiidæ),' by W. H. T. Tams; 'On Some European Yellow Forms of *Pieris napi* (L.) (Lep. Rhopalocera): a Review of the Literature,' by G. D. Hale Carpenter and B. M. Hobby; and several notes and observations.

The Entomologist's Monthly Magazine for September contains 'The Occurrence in England and Wales of *Haliplus heydeni* Weh.', by E. J. Pearce (numerous localities in England and Wales, no records for Scotland or Ireland; the favourite habitat is small grassy ponds and ditches); 'A New Species of *Harpegnathos* Jerd., with some Remarks on the Genus and the other known Species (Hym. Formicidæ),' by H. Donisthorpe; 'A List of the Diptera (Nycteribiidæ and Streblidæ) recorded from Bats of the Pacific Islands,' by G. B. Thompson; 'The Occurrence of *Hyponomeuta vorellus* (Lepid.) near Cambridge,' by C. G. Butler; 'The British Species of the *rufipes* group of *Pipunculus* (Diptera),' by J. E. Collin (*P. maculatus* Walk., England, Scotland; *P. semimaculatus* Beck., England; *P. xanthopus* Th., England, Scotland; *P. haemorrhoidalis* Ztt., England; *P. infirmatus* Coll., England, including Shotton Bog, Durham; *P. incognitus* Verr., Scotland; *P. confusus* Verr., England, Scotland, including Co. Durham and Westmorland); and two short records.

CRANEFLIES IN MULGRAVE WOODS

F. W. EDWARDS, M.A., Sc.D.

DURING a recent stay at Sandsend several visits were paid by myself and Messrs. H. Britten, Jun., and C. A. Cheetham to Mulgrave Woods. On the first of these visits (August 23rd) an interesting and apparently undescribed species of *Rhabdomastix* was obtained, besides some other interesting craneflies. In view of this discovery we decided to collect all the species of Tipulidæ which were on the wing, and it may be of some interest to give the complete list of species obtained during these visits (August 23rd and 30th and September 1st). Some notes are appended regarding the more interesting species.

The nomenclature and arrangement is that of my revision of the British Short-palped Craneflies, shortly to be published (unpublished names omitted here). Most of the species were present only in small numbers, the individuals being probably stragglers from summer broods.

- Tipula fulvipennis* De G.
 „ *paludosa* Mg.
 „ *lateralis* Mg.
 „ *rufina* Mg. (1)
 „ *alpium* Bergr. (1)
 „ *marmorata* Mg. (1)
Limonia (*Metalimnobia*) *quadrinotata* Mg.
 „ (*Limonia*) *nubeculosa* Mg.
 „ „ *macrostigma* Schum. (2)
 „ (*Dicranomyia*) *fusca* Mg.
 „ „ *dumetorum* Mg.
 „ „ *didyma* Mg.
 „ „ *chorea* Mg.
 „ „ *mitis* Mg.
 „ (*Rhipidia*) *maculata* Mg.
Taphrophila vitripennis Mg.
Pedicia (*Crunobia*) *littoralis* Mg.
Ula sylvatica Mg.
Austrolimnophila ochracea Mg.
Limnophila (*Phylidorea*) *ferruginea* Mg.
 „ (*Elaeophila*) *apicata* Lw.
 „ „ *mundata* Lw.
 „ (*Pilaria*) *discicollis* Mg.
 „ „ *nemoralis* Mg.
Oxydiscus fuscus Lw.
Crypteria limnophiloides Bergr.
Gonomyia (*Idiocera*) cf. *jucunda* Lw. (3)
 „ (*Gonomyia*) *conoviensis* Barnes (4)
Rhabdomastix sf. n. *lurida* Lw. (5)
Cheilotrichia (*Gonempeda*) *flava* Schum.
 „ (*Empeda*) *cinerascens* Mg.
Erioptera (*Ilisia*) *occoecata* Edw.
 „ „ *vicina* Tonn. (6)
Ormosia (*Ormosia*) *nodulosa* Mcq.
 „ „ *albitibia* Edw.
 „ „ *bicornis* de Meij. (2)
 „ (*Rhypholopus*) *hæmorrhoidalis* Zett. (2)

Molophilus griseus Mg.

„ *propinquus* Verr. nec Egg.

„ *corniger* de Meij. (7)

„ *cinereifrons* de Meij.

„ *ochraceus* de Meij. nec Mg. (7)

„ *armatus* de Meij.

„ *appendiculatus* de Meij. nec Staeg.

„ *medius* de Meij.

Trichocera hiemalis de G.

„ *rufescens* Edw.

NOTES

- (1) Ovipositing in shale (cliff and scree) near the Hermitage.
- (2) Infrequent on first visit, abundant later.
- (3) A scarce species, previously recorded from only two or three British localities; probably wrongly determined as *G. jucunda*.
- (4) Fairly abundant, and the only species of the subgenus seen (the absence of the common *G. dentata* is noteworthy). Another supposedly scarce species, previously recorded only from Shropshire and Carnarvon.
- (5) In fair numbers on bushes by stream side on August 23rd, had all but disappeared by September 1st.
- (6) Fairly common by stream, ♂♂ swarming at dusk. The absence of the closely related *E. areolata* is noteworthy.
- (7) Little known species usually considered scarce.

RECORDS

ARANEUS PYRAMIDATUS CLERCK

ON September 4th, *Araneus pyramidatus* Clerck was beaten in numbers from Birch on Strensall Common (new to V.C. 62). Mr. Falconer ('Spiders of Yorkshire,' *Naturalist*, 1921, p. 84) gives only three localities, all from V.C. 64, and Mr. Britten does not give it in his 'Arachnida of the Whitby District' (*Naturalist*, 1931, p. 225). With it occurred commonly *A. diadematus* Clerck and *A. cucurbitinus* Clerck.—GEO. B. WALSH, Scarborough.

A LACEWING AND A PSOCID NEW TO YORKSHIRE

WHILE working Larch and Scots Fir in the woods at Wyming Brook, near Sheffield (Yorks. V.C. 63), on August 25th, for *Hemerobius atrifrons* McL., which proved to be quite abundant on both trees, I was fortunate in taking a male of *Hemerobius pini* Steph., a species of Lacewing not previously recorded for Yorkshire. Killington (*Monograph of the British Neuroptera*, Vol. II, p. 43) states that it appears to be a rare and very local species.

On the same date, 25/8/37, and also on 11/8/37 and 6/9/37, I obtained in the same woods a number of specimens of *Peripsocus alboguttatus* Dalm., a Psocid also new to Yorkshire. It is a well-marked species, also very local in its distribution. It appeared to be more partial to Larch than to Scots Fir,

but occurred plentifully on both trees, but not by any means on all the trees examined.—JAMES M. BROWN.

A NEW YORKSHIRE SPIDER

ON June 6th, 1936, I captured an immature specimen of *Philodromus emarginatus* Schrnk. in Wragby Wood, V.C. 62. This record was purposely omitted from the 'Arachnidæ of Whitby and District,' *The Naturalist*, 1936, pp. 221-227, as it was thought advisable to have further material before publishing such an important addition to the spiders of Yorkshire. On July 5th, 1937, I was fortunate in capturing an adult female of the same spider in the wood at Helwath Beck, V.C. 62. This locality being some 2 miles eastward of the previous locality gives added interest to the capture.

As this spider is usually associated with Pine trees, it is of particular interest to note that the predominant tree in both these woods is Oak, whilst Alder is abundant by the stream sides and in wet places. Pines are few and far between, and are apparently not of recent introduction. A mile or so away eastwards of these two localities towards Scarborough there are considerable areas of Pine woods and plantations, which may prove to be the home of this spider, so that the specimens captured are stragglers or introductions into the respective localities.

Dr. A. Randell Jackson, M.D., 'Westcote,' Hoole Road, Chester, to whom my sincere thanks are due for so kindly determining the material I have collected, informs me that this is an important addition to the spiders of Northern England. In his letter of September 7th, 1937, he says, 'So far only known from the southern heaths and from the Highlands of Scotland, absent from the Midlands, Northern England, and Southern Scotland.'

The Yorkshire records are as follows: Wragby Wood, June 6th, 1936, H. Britten, V.C. 62; Helwath Beck, July 5th, 1937, H. Britten, V.C. 62.—H. BRITTEN.

REVIEWS AND BOOK NOTICES

Evolution Without Natural Selection, by J. C. McKerrow, pp. 63, 1s. net. Longmans, Green & Co. A curious feature resulting from the popularising of the idea of evolution has been that its shares with one or two other subjects the invidious distinction of being a problem upon which almost every educated person is prepared to express an opinion, while many are moved to write a book. This otherwise harmless pastime can be very annoying to the serious student, as it is very easy to lose the grains of sense among the bushels of chaff. The problems of evolution are, in fact, among the most complex the biologist has to face. The present pamphlet must be regarded as in quite a different category from the majority. Whether the author's idea of the evolution of human attributes will ultimately prove acceptable or not, he has stated a central

idea which is certainly worth following up. His central thesis is that life is a *habit*, in the large sense. That is to say, that the living organism represents a system which tends to go on doing the same or similar things. He then traces the metaphysical and psychological results of this conclusion in regard to the evolution of man. It is evident that Mr. McKerrow is mainly interested in psychology, and his arguments cannot be followed briefly. Although he treats biologists somewhat critically, it may be of interest to point out that his central biological thesis is very close indeed to the point of view of most modern physiologists, and of many experimental biologists. This is, in short, a very interesting contribution to the subject.

A Study of the British Species of *Epeolus* Latr. and their Races, with a Key to the Species of *Colletes* (Hymenoptera Apidae), by **O. W. Richards.** *Transactions of the Society for British Entomology.* Vol. 4, Part 2. The genus *Epeolus* consists of a number of parasitic bees which attack members of the bee genus *Colletes*. The European species have lately been revised by Bischoff (1930). The chief complication of the study of *Epeolus* races is the occurrence of so many of the host species together. *Colletes cunicularia* L. is not attacked by an *Epeolus* and is confined to Cheshire and South and mid Lancashire where it occurs on the coastal sand dunes in April and May. *Colletes floralis* Eversm. (*montana* Mor.) is known from Scotland and Ireland. Its parasite is *Epeolus cruciger* Pz. *Colletes marginata* Smith is almost entirely a southern and coastal species. It is known from Cheshire, but records for Yorkshire, South-west and Cumberland are probably errors. It is attacked by *Epeolus cruciger* var. *marginatus* Bisch. and almost certainly by a small race of *E. variegatus* L. *Colletes succincta* L. is normally attached to heath land and gets pollen almost entirely from *Erica* and *Calluna*. Its special parasite is *Epeolus cruciger* var. *similis* Hoppp. *Colletes succincta* is known from Cumberland, Durham, Yorkshire, Lancashire, Nottinghamshire, Cheshire and Lincolnshire. *C. daviesana* Smith is very widespread, usually occurring with other species. It is apparently commoner in the east and north-east than in the south-west. It is recorded from Northumberland, Cumberland, Yorkshire, Lancashire, Cheshire and Nottinghamshire. Its parasite is a form of *Epeolus variegatus*. *Colletes fodiens* Geoff. is widespread in sandy places. It is recorded from Cumberland, Lancashire, Cheshire and Nottinghamshire. It is the host of forms of *Epeolus cruciger* and *variegatus*. *Colletes similis* Schenk is often found with the last species, but is more local. It is known from South-east Yorkshire. It is attacked by *Epeolus variegatus*. *E. variegatus* L. has been taken in Yorkshire (South-east and South-west), Lancashire, Cheshire and Nottinghamshire. *E. cruciger* Pz. has occurred in Yorkshire (South-east), Nottinghamshire, Cheshire and Lincolnshire. Mr. Richards gives 29 tables in illustration of his points of discussion, a key to the separation of the species of *Colletes* and a bibliography of references.

Afoot in Wild Places, by **Seton Gordon**, pp. xiv+220, with 48 illustrations. Cassell, 12s. 6d. Naturalists and others whose good fortune it has been to visit Western Scotland and the Hebrides will revel in this book, and those who have yet to make the acquaintance of the wild and lonely parts of Britain will find here a most powerful incentive to do so. Mr. Gordon's well-written and beautifully illustrated books are well known, and in this work he maintains his high standards. He writes equally well on folk-lore, scenery, and birds, and has some interesting historical notes. In addition there are chapters dealing with Loch Cuan, of Northern Ireland; Ile de Batz, an island of Brittany; and on Holy Island and the coast of Northumberland. As may be expected, the volume is profusely illustrated.

With Camera and Notebook : A Naturalist's Calendar, edited by **Phyllis Barclay-Smith** and **Rudolf Zimmermann**, size $9\frac{1}{4}" \times 7\frac{1}{4}"$. Published by M. C. Forrester, 9 Leinster Gardens, London, W.1, 3s. 6d. Here are sixty of the very finest photographs of birds, beasts, trees, flowers, and insects made up into a Calendar for 1938 with each picture detachable. The photographers include some very familiar names, such as Douglas English, Eric Hosking, Ian Thompson, C. W. R. Knight, R. St. Barbe Baker, and several of the best Continental nature photographers, not the least of whom is Rudolf Zimmermann, one of the two Editors of the Calendar. It would be difficult to over-praise this delightful collection. Every naturalist should have a copy hanging in his study, and we predict a very ready sale for it ; the Calendar is already available and will make an ideal Christmas present. There is a foreword by Eric Parker, who points out that all the species illustrated occur in Great Britain, and there are useful short notes to all the pictures. If in future years the publishers can maintain the very high standard of the present issue, the Naturalist's Calendar should be a ' best seller ' among the Annuals.

A List of Irish Birds, showing the Species contained in the National Collection, by **G. R. Humphreys**, pp. 76, Fifth Edition. Published by the Stationery Office, Dublin, 6d. This most useful compilation gives up-to-date information as to the status of all Irish birds. The latest nomenclature is employed, and Irish names for the commoner birds are given. The entries under each species are commendably short, but full references are given as also are particulars of recovery in Ireland of ringed birds.

Grouse Land and the Fringe of the Moor, by **Lt.-Col. Lord George Scott**, pp. 198, with 9 illustrations. Witherby, 7s. 6d. A peculiarly British bird, the Grouse deserves a book to itself, and the author of the work under review has all the qualifications for the task. In 1911 the Board of Agriculture and Fisheries published its famous report on disease amongst grouse under the title *The Grouse in Health and in Disease*, and Lord George Scott freely quotes from this work, but at the same time he draws much from his own long experience of the management of grouse moors. There is a very full account of the life of the grouse, its habits, and the diseases to which it is subject. There are chapters on grouse moor management and on grouse shooting. Other parts of the book deal with such associated subjects as sheep, afforestation, black game and partridge shooting, and the Hon. H. Douglas-Home contributes an interesting chapter on Snipe. Such a concise low-priced, and readable book on game will be welcomed by naturalists, owners of grouse moors, and by gamekeepers.

Insects of the British Woodlands, by **R. Neil Chrystal**, pp. xiv+338, with 205 illustrations. Warne, 7s. 6d. This book combines an excellent introduction to Entomology with the application of the science to Forestry. All who have to do with the cultivation of trees are well aware of the effects of insect life on the well-being of woods and forests, but there are many foresters who are not entomologists. In Dr. Chrystal's clearly written treatise will be found just the right type of information. The Orders of insects are fully described with most adequate illustrations, and with copious notes on the ' Forest Relations ' of each species dealt with. There is a valuable chapter on the origin of insect attacks in woodlands ; natural and artificial control ; and collecting methods. The book concludes with two appendices containing descriptions of some important forest insect genera and species, a list of the more important forest insects described in the book, and a very complete bibliography. The book is well produced and very moderately priced.

YORKSHIRE NATURALISTS AT DONCASTER

THE August Bank Holiday meeting this year was arranged to have Doncaster as the centre, and Potteric Carrs as one of the areas to be visited.

Mr. A. A. Dallman writes : Potteric Carr (formerly Pottery Carr) represents the site of a former extensive morass. J. Smeaton, the eminent civil engineer (builder of the Spurn and Eddystone Lighthouses and superintendent of the construction of the Calder Navigation), inspected the area and reported to the Doncaster Corporation in 1762 on the drainage of the region with a view to its being brought under cultivation. Another noted engineer, J. Brindley, was also commissioned by the Corporation to inspect and report on the proposal in 1765. He was most optimistic as to the ultimate success of the project, and encouraged the promoters to proceed with the work. Parliamentary sanction was obtained in 1764, and the one-time open expanse of bog and water was enclosed in 1771. Hedges were planted in 1831, and records show that several plantations date back to the early part of last century. Dr. E. Miller, the Doncaster musician and historian, has left a graphic account of the former state of the area, and the remarkable results obtained when the land came under cultivation with consequent rapid increase in value. Miller was one of the pioneers in reclaiming a portion of this region for cultivation, and he farmed one part and was owner of another. See in this connection his *History and Antiquities of Doncaster and its Vicinity* (1804) and *Historical Notices of Doncaster* by C. J. Hatfield (1866).

The Doncaster Society very kindly arranged for us to visit Smeaton Crags and Stapleton Park on the Saturday, and Levitt Hagg and Sprotborough Woods on Monday. Mrs. Morehouse had obtained the many necessary permissions from the various landowners, and at the meeting for sectional reports a vote of thanks was accorded to them for this opportunity to visit the district, and to Mrs. Morehouse for her help in organizing the meeting.

Botany.—Dr. W. A. Sledge writes : In the Smeaton and Brocodale areas the Magnesian limestone pasture flora reaches its best development in the county, and here a larger number of the rarer calcicolous species are to be seen than on any other of the commons, quarries, parks or untilled areas throughout the Permian tract. The district has been so well worked by botanists that new records were scarcely to be expected, but it was gratifying to find practically all the rarer species recorded for the area still holding their ground. The most notable species seen were *Dipsacus pilosus* L. and *Vinca minor* L., the latter in great quantity in Brocodale Woods, and looking very much at home there. Miss Rob found *Gastridium lendigerum* Gaud. on the outskirts of Brocodale Woods, presumably introduced in some way, but even so a very unexpected species. *Clematis vitalba* L. was seen in profusion on the outskirts of Stapleton Park, and there does not appear to be any reason to doubt its being indigenous here and elsewhere on the Magnesian limestone in the southern part of the county. Other species seen on this excursion include the following :—

Ranunculus circinatus Sibth.
Arabis hirsuta Scop.
Reseda lutea L.
Helianthemum Chamæcistus Mill.
Cerastium arvense L.
Arenaria tenuifolia L.
Hypericum montanum L.
Anthyllis Vulneraria L.

Astragalus danicus Retz.
Spiræa Filipendula L.
Potentilla verna L.
Hippuris vulgaris L.
Conium maculatum L.
Silene flavescent Bernh.
Daucus Carota L.
Asperula cynanchica L.

Valerianella dentata Poll.
Inula squarrosa Bernh.
Carduus nutans L.
C. crispus L.
C. crispus × *nutans*.
Centaurea Scabiosa L.
Campanula glomerata L.
Legousia hybrida Del.
Ligustrum vulgare L.
Blackstonia perfoliata Huds.
Centaureum umbellatum Gil.
Gentiana Amarella L.
Lithospermum officinale L.
Clinopodium vulgare L.

Galeopsis angustifolia Ehrh.
Ballota nigra L.
Daphne Laureola L.
Euphorbia exigua L.
Epipactis latifolia Sw.
Ophrys apifera Huds.
Butomus umbellatus L.
Potamogeton crispus L.
P. pectinatus L.
Poa compressa L.
Bromus erectus Huds.
Brachypodium pinnatum Beauv.
Taxus baccata L.
Equisetum maximum Lam.

Potteric Carrs proved but a shadow of its former self. The Great Eaa Plantation, from which, and from its adjoining dikes, most of the rarer plants were recorded, no longer exists, and half the area which it occupied is now buried in cinders. The only notable species which still survives is *Calamagrostis lanceolata* Roth. The best ground proved to be the dikes adjoining the railway on the Loversall side of the carr and those bordering the G.N. main line south of the Finningley branch. In the former locality *Typha angustifolia* L. and *Potamogeton coloratus* Hornem. are plentiful. The latter species is unrecorded for this area in Lees' Flora, and is a welcome addition to the very few localities in which it is known in the county. Other species observed at Potteric Carrs include the following :—

Thalictrum flavum L.
Viola canina L.
Apium nodiflorum Reichb. f.
Lythrum Salicaria L.
Lysimachia vulgaris L.
Samolus Valerandi L.
Lycopsis arvensis L.
Mentha aquatica L.

Rumex Hydrolapathum Huds.
Hydrocharis Morsus-rance L.
Typha latifolia L.
Lemna polyrrhiza L.
Scirpus lacustris L.
Carex paniculata L.
C. acutiformis Ehrh.
C. riparia Curt.

The sands and gravels to the east of Potteric about Cantley and Bessacarr yielded some interesting arenicolous species such as *Silene anglica* L., *Spergularia rubra* Presl., *Hypericum humifusum* L., *Trifolium arvense* L., *Ornithopus perpusillus* L., *Potentilla argentea* L., *Senecio sylvaticus* L. (very abundant), and *Plantago coronopus* L. It was interesting also to note that *Apera spica-venti* Beauv. is still plentiful in the cornfields about Cantley and district.

From Sprotborough, in addition to many of the limestone pasture plants observed on the Saturday's excursion, the following species were noted :—*Aquilegia vulgaris* L., *Sambucus ebulus* L., *Allium oleraceum* L., *Glyceria distans* Wahlb., and *Ophioglossum vulgatum* L.

Mycology.—Mr. W. G. Bramley writes : South-west Yorkshire has been noted in the past as not being as good as other parts of Yorkshire for fungi, and this has been borne out during the week-end. This was especially noted in the Uredines. The grasses were remarkably free from infection. The larger toadstools were scarce. This may be due to the woods being of recent growth with few old stumps and logs. *Lactarius subdulcis* was noted fairly numerous in one strip of wood, but many were only evidenced by a single specimen. Potteric Carr was more favourable than Brocadale, being damper and with a few fallen trees, but these were

nearly all birch. Thanks are due to Mr. T. Petch and the Director of Kew for help in determinations.

P=Potteric Carr.

B=Brocodale.

- Phallus impudicus* (Linn.) Pers. P.
Lycoperdon giganteum (Batsch.) Pers. P.
Scleroderma aurantium Pers. B.
Pluteus cervinus (Schaeff.) Fr. P.
Stropharia semiglobata (Batsch.) Fr. P.
Collybia radicata (Relk) Berk. B.
Psilocybe spadicea Fr. B.
Mycena sanguinolenta (A. & S.) Fr. B.
Galera tenera (Schaeff.) Fr. B.
G. hypnorum (Shrank.) Fr. P.
Pleurotus sapidus Schulz. P.
P. applicatus (Batsch) Berk. P.
Russula cyanothantha (Schaeff) Fr. P.
Lactarius subdulcis (Pers.) Fr. P.
Coprinus radiatus (Bolt.) Fr. B.
Androcaceus rotula (Scop.) Pat. P.
Lentinus lepideus Fr. P.
Boletus chrysenteron (Bull.) Fr. P.
Polyporus squamosus (Huds.) Fr. P.
P. sulphureus (Bull.) Fr. P.
P. betulinus (Bull.) Fr. P.
Fomes annosus Fr. B.
F. connatus Fr. P.
Polystictus versicolor (Linn.) Fr. B., P.
Irpex obliquus (Schrad.) Fr. B., P.
Grandidia helvetica (Pers.) Fr. P.
Phylacteria terrestris (Ehrk.) B. & G. P.
Stereum spadiceum Fr. P.
S. hirsutum (Willd.) Fr. B., P.
Tremella mesenterica (Retz.) Fr. B.
Dacryomyces deliquescens (Bull.) Duby. B.P.
Calocera viscosa (Pers.) Fr. B.P.
C. stricta Fr. P.

- Uromyces rumicis* Wint. B.
Puccinia carduorum Jacky. II, III, on *C. nutans*. B.
P. obtegens Tul. II, III, on *C. arvense*. B. P.
P. conii Fckl. II, III, on *Conium*. B.
P. malvacearum Mont. III, on *Althea*. B.
P. lolii Niels. II, III, on *Lolium* and *Arrhenatherum*. B.
P. bromina Eriks. II, III, on *Bromus* sp. B.
P. holcina Eriks. II, III, on *Holcus*. B.
P. arrhenatheri Eriks. II, III, on *A. elatior*. P.
P. obscura Schröt. II, III, on *L. campestris*. P.
Ustilago tritici Jensen. On Wheat. P.
U. kuhneana Wolff. On *Rumex obtusifolius*. B.
Urocystis anemones Schroet. On *R. repens*. B.

- Epichloe typhina* Pers. B.
Hypocrea pulvinata Fckl. P.
Hypomyces aurantius (Pers.) Tul. P.
Xylaria polymorpha (Pers.) Greb. B.
X. hypoxylon Linn. P.
Daldinia concentrica (Bolt.) Ces. & De Not, on Birch. P.
Hypoxylon coccineum Bull. B.
Diatrype stigma (Hoffm.) Fr. P.
D. disciformis (Hoffm.) Fr. B.
Diatrypella favacea (Fr.) Ces. & De Not. B.P.
Lasiosphaeria hirsuta (Fr.) Ces. & De Not. P.
Melanomma pulvis-pyrius (Pers.) Fckl. B.
Melanconis stilbostoma (Pers.) Tul. (conidia). P.
Sphaerotheca pannosa Lév. B.
Erysiphe graminis D. C., B.P.
E. cichoracearum D. C., on *Actium*. P.
Taphrina aurea Fr. B.
Rhytisma acerinum Fr. B.P.
Catinella olivacea (Batsch) Bond. P.
Belonidium pruinatum Mass. P.
Peziza ampliata Pers. P.

Graphium ulmi Schwarz. B.P. Several elm trees were noted attacked by the Dutch Elm Disease.

<i>Ceratomyxa fruticulosa</i> Macbr. B.	<i>Arcyria denudata</i> Sheldon. P.
<i>Fuligo septica</i> Gmel. B.P.	<i>A. mutans</i> Grev. P.
var. <i>rufa</i> Lister. B.	<i>Perichæna corticalis</i> Rost. P.
<i>Reticularia lycoperdon</i> Bull. P.	<i>Licea minima</i> Fr. P. Amongst
<i>Lycogala epidendrum</i> Fr. P.	mycelium growing on decaying
<i>Trichia varia</i> Pers. P.	<i>Polyporus betulinus</i> (det. T. Petch).

Mollusca.—During the meeting at Doncaster it was extremely hot, so land mollusca were conspicuous by not being visible, except when stones, etc., were overturned.

On Monday at Levitt Hagg when one large stone was moved, a pretty sight was revealed—a frog, a toad, one *Limax maximus* Linné, three *Helix nemoralis* Linné, and several *Pyramidula rotundata* Müller were all taking shelter from the heat of the day.

The following list of mollusca was observed during the excursions except at Smeaton and Brocodale, these extend over the past year.

SMEATON AND BROCODALE.

<i>Vitrea pellucida</i> Müller.	<i>Helix aspersa</i> Müller.
<i>V. pura</i> Alder.	<i>H. nemoralis</i> L. and vars.
<i>Pyramidula rotundata</i> Müller.	<i>Ena obscura</i> Müller.
<i>Helicella virgata</i> da Costa.	<i>Cochlicopa lubrica</i> Müller.
<i>H. caperata</i> Montagu.	<i>Cæcilioides acicula</i> Fér.
<i>Theba cantiana</i> Montagu.	<i>Jaminia cylindræa</i> Montagu.
<i>Hygromia hispida</i> Linné.	<i>Clausilia bidentata</i> Ström.
<i>H. rufescens</i> Pennant.	<i>Succinea putris</i> Linné.
<i>Vallonia costata</i> Müller.	<i>Planorbis vortex</i> Linné.
<i>V. excentrica</i> Sterke.	<i>Arion ater</i> Linné.
<i>Arianta arbustorum</i> Linné.	<i>A. ater</i> v. <i>plumbea</i> Roebuck.
	<i>A. ater</i> v. <i>brunnea</i> Roebuck.

SPROTBOROUGH AND LEVITT HAGG.

<i>Helix nemoralis</i> L. and vars. (new habitat).	<i>Vitrea alliaria</i> Miller.
<i>Hygromia hispida</i> Linné.	<i>V. cellaria</i> Müller.
<i>Cochlicopa lubrica</i> Müller.	<i>Theba cantiana</i> Montagu.
<i>C. lubrica</i> v. <i>lubricoides</i> Fér.	<i>Agriolimax agrestis</i> Linné.
<i>Pyramidula rotundata</i> Müller.	<i>Limax maximus</i> Linné.

POTTERIC CARR.

<i>Limnæa stagnalis</i> Linné.	<i>Planorbis corneus</i> Linné.
<i>L. pereger</i> Müller.	<i>P. vortex</i> Linné.

Entomology.—Many of the entomologists' captures are still to be worked out. Mr. Woods collected Hymenoptera and some other orders, and a party of coleopterists had a busy day in the railway ditches; a report of these collections is printed on page 249. A noteworthy butterfly was the Speckled Wood (*Pararge aegeria* L.), which was seen in Stapleton Park and amongst the diptera, *Leptogaster cylindrica* De Geer from Smeaton Leys, was a welcome addition to the Yorkshire list. In

the same place *Machimus atricapillus* Flin. was taken; this species was added to our list at the Pocklington meeting last August.

Another scarce Yorkshire insect taken was *Xylota sylvarum* L.; the more common *X. segnis* L. also occurred. Last year the tachinid *Oliveria lateralis* F. (*Eriothrix rufomaculatus* Deg.) was noted very plentifully from widespread districts, but this year it is only to be seen occasionally as it was in the Doncaster area. Another tachinid taken was *Ernestia truncata* Zett. Syrphids, the Hover flies, were mostly represented by the Drone flies, *Eristalis*; two species were noted, *E. intricarius* L. and *E. arbustorum* L. Other syrphids were *Chilosia proxima* Ztt., *C. impressa* Lw., *Ischyrosyrphus glaucius* L., *Sphaerophoria menthastri* L., *Chrysotoxum bicinctum* L., *Myiatropa florea* L., *Helophilus pendulus* L. The dolichopod *Psilopus contristans* W., a single *Pipunculus nigrutilus* Ztt., and *Meromyza leta* Mcq. complete the list taken by your Secretary.

Mr. J. M. Brown adds: The district was known of old to be good entomological ground, the weather was excellent, and the recorder was fortunate in being 'lost' early in the day, so intensive work was possible. Even with all these advantages it was rather surprising, in a district so well worked, to be able to add so many species new to the vice-county, and also two species as new to Yorkshire. With more time at one's disposal it is probably that this number could have been considerably increased.

HEMIPTERA

The best collecting ground on Saturday proved to be the Smeaton Ings bordering the River Went. Here among the damp vegetation Hemiptera were fairly plentiful, and some interesting species were obtained. From the nettle beds *Heterotoma meriopterum* and *Byrsoptera rufifrons*, species not usually very common with us, were taken. *Macropsis virescens* and *Delphacodes discreta*, both uncommon species, were quite plentiful, while a female individual of *Orthocephalus saltator*, an interesting species new to the county, was swept from grass. A short time spent in the Stapleton Woods yielded nothing of special interest.

The best species taken on Saturday were:—

HETEROPTERA

**Tingis cardui* L. A species plentiful on Spear Thistle, but apparently not recorded for V.C. 63.

Reduviolus flavomarginatus Sch. Not very plentiful.

Pithanus maerkeli H.S. Occasional specimens from grass.

Stenodema calcaratus Fall., *Miris dolobratulus* L., and *M. ferrugatus* Fall.

All plentiful among grass.

Calocoris sexguttatus F. and *C. norvegicus* Gmel. Both common.

Plesiocoris rugicollis Fall. On Sallows.

**Lygus campestris* L. (*pastinacæ* Fall.). Very numerous on the flowers of Umbelliferæ.

L. viridis Fall. and *L. contaminatus* Fall. Common.

†*Orthocephalus saltator* Hahn. A female swept from vegetation on Smeaton Ings. New to Yorkshire.

Dicyphus epilobii Reut. Plentiful on *Epilobium hirsutum* wherever this was examined.

Heterotoma meriopterum Scop. Very plentiful on Nettles. This species was in exceptional numbers.

Byrsoptera rufifrons Fall. On Nettles, but not plentiful.

Homoptera

Euacanthus interruptus L. Plentiful.

**Macropsis virescens* F. Very plentiful on riverside *Salix* spp. This

bright green species has only been recorded twice before in the county, and the only previous record for V.C. 63 is a very old Huddersfield one.

Aphrodes nervosus Schr. Common in grass.

Empoasca smaragdula Fall. Plentiful.

Delphacodes pellucidus Fab. Plentiful among damp grass.

**D. discreta* Edw. A small inconspicuous black species which I have twice taken before in Yorkshire, at Elmswell and at Askham Bogs. It was very plentiful among grass.

On Monday the most satisfactory results were obtained on the grassy slopes just beyond the Sprotborough Woods on the Conisborough side, the undergrowth within the woods being too dense for good working. *Megalocera linearis*, rarely taken in Yorkshire, was quite plentiful along with *Notostira erratica*, *Stenodema calcaratum*, and *S. lævigatum*, but rather strangely, our commoner species, *S. holsatum*, was not seen. *Macrotylus solitarius* occurred on *Stachys*, and *Psallus salicellus* on Sallow, both seldom taken in the county. *Typhlocyba plebeja*, taken previously in one locality only, occurred on Elm, along with *T. nitidula*, also a local species. On Tansy *Megalocoleus pilosus* was very plentiful, and a single specimen of *Delphax pulchellus*, another addition to the county, was obtained. Curiously, the male of *Orthocephalus saltator*, a species added to the county list on the previous Saturday, was also taken.

Species taken either in the Woods or beyond included :—

HETEROPTERA

**Tingis cardui* L. On Spear Thistle.

Stenodema calcaratum Fall. and *S. lævigatum* L. Common among long grass.

Notostira erratica L. Along with the preceding species.

**Megalocera linearis* Fuess. Plentiful in the long grass. This species has previously been recorded for V.C. 61 only.

Phytocoris longipennis Flor. On Hawthorn.

Calocoris norvegicus Gmel. Plentiful.

**Lygus campestris* L. On Umbellifers and plentiful, as on Saturday.

†*Orthocephalus saltator* Hahn. A male swept from grass. The male of this species has normal wings while the female is usually short winged, as was the specimen taken on Saturday.

Malacocoris chlorizans Fall. A delicate species from Hazel.

**Megalocoleus pilosus* Sch. (*taneceti* Fall.). Plentiful on the Tansy in Sprotborough Woods.

**Macrotylus solitarius* Mey. On *Stachys sylvaticus*.

**Phylus coryli* L. var. *avellanæ* Mey. On Hazel.

**Psallus salicellus* Mey. Occasional on Sallow. Previously recorded only from Lastingham.

HOMOPTERA

Deltocephalus abdominalis Fab. and *D. pulicaris* Fall. Common in grass.

Jassus mixtus Fab. Plentiful.

**Limotettix persimilis* Edw. In grass.

Alebra albostriella Fall. Frequent in Oaks.

Eurhadina pulchella Fall. Also plentiful in Oaks.

Typhlocyba quercus Fab. Common in Oak.

**T. nitidula* Fab. On Elm along with *T. ulmi* L. and the next species. *Edwardsiana* (*Typhlocyba*) *plebeja* Edw. Taken previously only in Ecclesall Woods, Sheffield. It was very plentiful on Elm.

Cixius nervosus L. Common.

†*Delphax* (*Aræopus*) *pulchellus* Curt. A single specimen of this characteristic species, new to Yorkshire.

**Delphacodes fairmairei* Perr. Fairly plentiful in grass.

(Species new to Yorkshire marked † ; new to V.C. 63 marked *.)

NEUROPTERA, ETC.

Members of these orders did not appear to be very numerous on either Saturday or Monday. Those taken included :—

Panorpa communis L. In Stapleton Woods.

Conwentzia psociformis Curt. Not plentiful, Sprotborough Woods.

Hemerobius lutescens Fabr. On Oak, Sprotborough Woods.

H. micans Oliv. In Stapleton Woods.

Kimminsia (*Boriomyia*) *subnebulosa* Steph. Sheltering in Yew, Sprotborough Woods.

Chrysopa albolineata Kill. Sprotborough Woods.

Amphigerontia bifasciata Latr. Sprotborough Woods, the only Psocid specially noted.

TRICHOPTERA

Caddis-flies were not very numerous, those taken included :—

Linnophilus flavicornis Fabr. A single specimen sheltering in Elder on the margin of Sprotborough Woods. The late Mr. G. T. Porritt stated that this species was widely distributed and moderately common, but our only records appear to be for Thorne and Askham Bogs.

L. auricula Curt. Numerous, sheltering in Yew, Sprotborough Woods.

L. griseus L. Stapleton and Sprotborough Woods.

Hydropsyche angustipennis Curt. Very abundant by the River Went, Little Smeaton.

Tinodes wæneri L. Even more numerous by the River Went.

ORTHOPTERA

The Grasshoppers, *Myrmeleotettix* (*Gomphocerus*) *maculatus* (Thunb.) and *Omocestus viridulus* (L.), were plentiful on the sunny hillsides near Stapleton Woods.

COLLEMBOLA

Although these small insects were not looked for on this occasion, the pretty little *Deuterosminthurus bicinctus* (Koch) was noted in the grass near Sprotborough Woods.

SAWFLIES

A number of Sawflies were collected, but the species have not yet been entirely worked out.

The Entomologist's Record for September contains 'Autumnal Lepidoptera in Kurdistan: Preliminary Notes on some Excursions in the Rowanduz Chai Valley, Iraq,' by E. P. Wiltshire; 'Records about the Development of a few Papilio,' by O. Querci; '*Limoniscus violaceus* Mull. (Elateridæ), a Genus and Species of Coleoptera new to Britain,' by A. A. Allen (Windsor Forest, one in old decaying beech trunk); 'Scientific Notes'; 'Notes on collecting, etc.'; 'Current Notes'; and supplements, 'The British Noctuæ and their Varieties,' by H. J. Turner; and 'New Lepidoptera from Iran,' by H. Bytinski-Salz.

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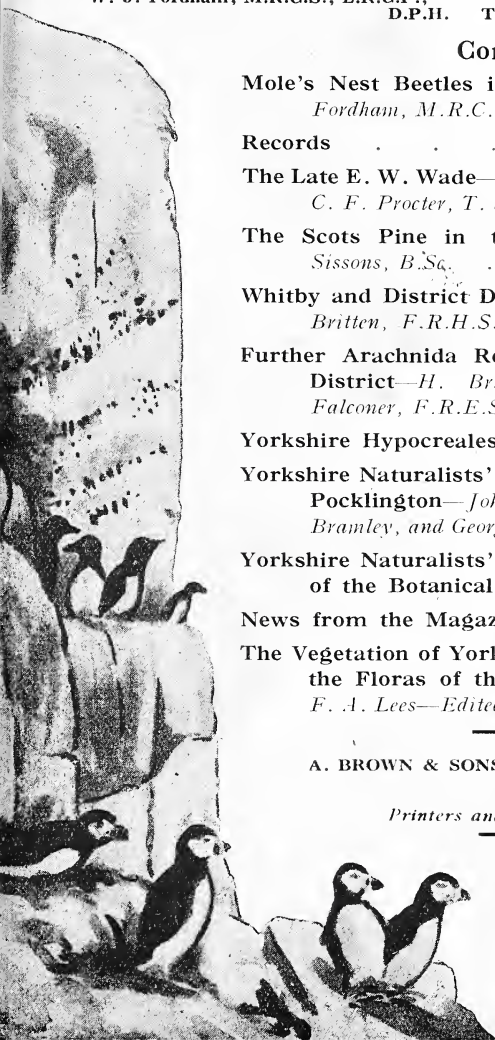
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MOLE'S NEST BEETLES IN EAST YORKSHIRE

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

DURING the period, from February, 1913, to December, 1922, I dug out over 100 moles' nests and though rather late in the day it may be of interest to coleopterists to study an analysis of the results. The characteristic mole's nest species were *Hister marginatus* (14), *Aleochara spadicea* (56), *Oxytoda longipes* (3), *Atheta paradoxa* (9), *Quedius othiniensis* (*talparum*) (43), *Q. nigrocoeruleus* (28), *Q. longicornis* (3), *Q. brevicornis* (3), and *Choleva intermedia* (1).

Hister marginatus occurs regularly but sparingly in moles' nests in Great Britain up to Ross-shire and has been recorded from Cumberland and Nottinghamshire. It usually occurs singly. *Aleochara spadicea* usually occurs in numbers when found. It has occasionally been found away from moles' nests as in flood refuse. It is widely distributed in England and Scotland and has been taken in Cumberland.

Oxytoda longipes is apparently very local. It occurs in England and Scotland to Ross-shire and has been taken at Hartlepool.

Atheta paradoxa (*nidorum*) is a small obscure species which is apparently not common. It has not been taken in Scotland.

Quedius othiniensis is the mole's nest beetle *par excellence*. It is widely distributed as far north as the north of Scotland, and is usually common. It is not often taken away from the nest, though I have swept one from mixed herbage. It occurs in the north of England, in Lincolnshire, Cheshire, Cumberland, Durham, and Northumberland and is widespread in Yorkshire.

Q. nigrocoeruleus is a rare species apparently commoner in East Yorkshire than elsewhere. As many as five have occurred in one nest. It occurs in Cumberland but has not been taken in Scotland. It has been taken at Bury St. Edmunds in a nest of the bee *Bombus hortorum*.

Q. longicornis is not uncommon and probably leaves the nest more frequently than *othiniensis*. It occurs in England, South Scotland and Ireland, and has been recorded from Durham and Northumberland, Cumberland, Westmorland, and Lancashire.

Q. brevicornis usually occurs in birds' and wasps' nests. It was first bred from a mole's nest at Bridlington by W. E. Sharp in May, 1909. It occurs in England and Ireland but apparently not in Scotland, and has been taken in Northumberland.

Choleva intermedia (*oblonga*) occurs in England and Scotland and has been taken in Cumberland, Lancashire, and Nottinghamshire. It is usually attached to rabbit burrows, but also occurs in moles' nests.

An outstanding feature of the mole's nest beetle fauna of the western or Derwentland division of East Yorkshire is the absence of *Heterothops nigra*. This species has been taken in the east of the Riding by W. E. Sharp at Bridlington. This absence is especially noteworthy in view of its abundance in the south of England. It is about the most characteristic mole's nest beetle, nearly always present and often in numbers. It also occurs in rabbits' burrows and badgers' earths.

Particulars are herewith given of the 100 or so nests examined in Derwentland. In almost every case I have notes of the presence in the nests of mites, large and small fleas, and small and mature larvæ.

February, 1913.—Bubwith, by river ; 6 nests. *Hister marginatus* (1), *Quedius othiniensis* (5), *Q. longicornis* (2).

March, 1915.—Brighton ; 3 nests. No adult beetles.

March, 1915.—Bubwith, river bank ; 5 nests, 4 of grass, 1 of grass and leaves. *Q. othiniensis* (1), *Q. nigrocoeruleus* (1).

April, 1915.—Escrick, grass field ; 2 nests. *Hister marginatus* (1), *Aleochara spadicea* (9), *Atheta* sp.

April, 1915.—North Duffield ; 1 nest. *Atheta paradoxa* (7), *Quedius othiniensis* (1), *Exomias araneiformis* (several).

February, 1916.—Bubwith, by river ; several nests, all of grass. *Hister marginatus* (2), *Aleochara spadicea* (7), *Oxyptoda longipes* (1), *Atheta paradoxa* (1), *Quedius nigrocoeruleus* (8), *Conosoma pubescens* (1).

March/April, 1916.—Seaton Ross, turnip field ; 4 nests of stalks, wicks, and coarse vegetable refuse, 1 with grass. *Quedius othiniensis* (1).

Same date and place, grass field ; 5 nests. *Q. nigrocoeruleus* (1).

March, 1916.—Ellerton, potato field ; 2 nests, 1 with grass and leaves in hedge, 1 with potato stalks and vegetable refuse. *Q. othiniensis* (1), *Atheta* sp.

March, 1916.—North Duffield ; 8 nests. *Hister marginatus* (1), *Quedius othiniensis* (3), *Q. nigrocoeruleus* (1), *Q. brevicornis* (1), *Xantholinus linearis*.

March, 1916.—Foggathorpe ; 35 nests. *Hister marginatus* (1), *Aleochara spadicea* (3), *Quedius othiniensis* (15), *Q. brevicornis* (2), *Clivina fossor* (1), *Epuraea* sp., *Oxytelus tetracarinus*, *Atheta* sp. One each *othiniensis* and *nigrocoeruleus* bred from larvæ.

February, 1917.—Escrick ; 2 nests, grass. *Hister marginatus* (1), *Aleochara spadicea* (12), *Quedius othiniensis* (5), *Q. nigrocoeruleus* (2), *Helophorus aquaticus*, *Bolitochara obliqua* (2), *Oxytelus rugosus*, *Aphodius pusillus*.

April, 1917.—Aughton ; 8 nests, grass. *Hister marginatus* (2), *Aleochara spadicea* (6), *Oxyptoda longipes* (1), *Quedius nigrocoeruleus* (5), *Q. longicornis* (1), *Choleva intermedia* (1), *Pterostichus macer* (1), *Sitones* sp., *Atheta vicina*, *Oxytelus* sp.

April, 1918.—Bubwith ; 3 nests. *Oxyptoda longipes* (1), *Atheta* sp. (2).

February, 1919.—Escrick, grass field ; 7 nests, grass, corn stems, roots, and leaves. *Hister marginatus* (2), *Aleochara spadicea* (8), *Atheta paradoxa* (1), *Quedius othiniensis* (6), *Q. nigrocoeruleus* (1).

February, 1919.—Escrick, grass field ; 3 nests. *Aleochara spadicea* (7), *Quedius othiniensis* (2), *Q. nigrocoeruleus* (5 in 1 nest).

March, 1921.—Allerthorpe, pasture ; 4 nests, grass. *Hister marginatus* (1), *Aleochara spadicea* (1).

March, 1921.—Allerthorpe, pasture ; 2 nests, grass. *Aleochara spadicea* (2), *Quedius othiniensis* (1), *Agriotes obscurus* (1).

December, 1922.—Allerthorpe, pasture; 5 nests, grass. *Hister marginatus* (1), *Aleochara spadicea* (2), *Quedius othiniensis* (2), *Q. nigrocoeruleus* (5).

Of the adventitious coleoptera recorded above the most interesting is *Exomias araneiformis*. This species is usually found in moss and is locally abundant. *Clivina fossor* is occasionally taken in ants' nests.

Of the characteristic species it may be noted that *Quedius nigrocoeruleus* affects the outer part of the nest as well as the centre. In digging for moles' nest beetles the runs should always be examined as well as the nest.

RECORDS

SOME RARE YORKSHIRE COLEOPTERA AND HEMIPTERA

COLLECTING during the present season has been very poor, but the following captures seem worthy of record.

COLEOPTERA.—On May 17th I spent a couple of hours beating larch, pines and wind-thrown pines on Newgate Bank, about 7 miles north of Helmsley. *Polydrosus pilosus* Gred. was in abundance on larch, about ten *Pissodes pini* L. were beaten from fallen pines, and from standing pines were obtained a couple of *Haplocnemus nigricornis* F. and a single male *Hylecoetus dermestoides* L., the last being a new county record, and a rare insect generally.

HEMIPTERA.—A single specimen of *Syromastes marginatus* L. was brought to me from the cliffs at Cloughton. This is an insect of distinctly southern range, and its most northern record as given by Butler (*British Hemiptera-Heteroptera*, p. 646) is Suffolk. This break of continuity of geographical distribution is paralleled by that of *Coreus scapha* F., which is recorded from Northumberland, Durham and Yorkshire (there is more than one record from Burniston), and next from Kent. On September 6th a visit was paid to Helmsley, where *Piezostethus cursitans* Fall. occurred under bark of felled trees; Dr. Fordham informs me that its previous Yorkshire records are Allerthorpe and Egton Bridge. *Platychila ampliata* Fieb. was abundant on thistles; this has previously been recorded only from Thorne and Allerthorpe.—GEO. B. WALSH, Scarborough.

IBALIA LEUCOSPOIDES HOCH.

THIS interesting 'Cynipid' which is parasitic on Sirox and allied species is by no means a common insect, therefore it is a pleasure to be able to record the capture of a number of specimens in the area in which I am working. Whilst examining Spruce logs in Mulgrave Woods I noticed a number of emergence holes of a species of Sirex. Whilst attempting

to dig out a specimen of the Sirex I was able to capture six specimens of *Ibalia*. I had noted that there were thirty to forty smaller emergence holes in the log, these indicating a good emergence of *Ibalia*. Twelve or so Sirex had also emerged judging by the larger holes. A few days later accompanied by F. W. Edwards, M.A., D.Sc., F.R.E.S., I was successful in capturing three more specimens of *Ibalia* but did not see any Sirex. There had been a good emergence of both insects during the few days between my visits. It was noted that a small 'Fossor' which unfortunately I failed to capture was using the burrows of *Ibalia* on this latter visit.

The records are as follows :—Mulgrave Woods, 16/8/37, H.B. ; 25/8/37, H.B., V.C.62.—H. BRITTEN.

THE LATE E. W. WADE

THE 'In Memoriam' to the late E. W. Wade on page 194 prompts some of us who knew and loved him to add a note of appreciation of his long service to Natural History. He was President of the Hull Scientific and Field Naturalists' Club in 1910 and 1911. He was a very active member for thirty years and his observations and records covered a wide area, both geographical and ornithological. The following titles of lectures, illustrated by his own slides, show the volume and nature of his work : Notes on an Ornithological Tour in Norway (1907), The Birds of Bempton Cliffs (1902), Birds and their Nests (1902), Ornithological Rambles in Holland (1906), Sensitiveness of Animals to Pain (1906), Bird Life in Hungary (1907), Bird Notes in 1907 (1908), British Birds (Presidential Address) (1911), An Ornithologist's Visit to St. Kilda (1915).

He displayed parallel interest in the Vertebrate Section of the Yorkshire Naturalists' Union, and his offices and activities were very evenly repeated there.

Wild Nature has lost a fine historian. The Hull Scientific Club and the Yorkshire Naturalist' Union, a firm friend.—H. M. FOSTER, C. W. MASON, C. F. PROCTER, T. STAINFORTH.

NEWS FROM THE MAGAZINES

My Garden for October appears in a new and improved cover. It contains the following among many other articles : 'First Flowers,' by Compton Mackenzie ; 'Foliage Borders,' by G. R. Jackman ; 'The Passing Show,' by W. E. Johns ; and 'The Grey Outlaw,' by Phyllis Kelway. The coloured illustrations are of *Rhododendron ferrugineum* and *Anemone sulphurea*. The November number has 'Cottage Pie,' by Dorothy Whipple ; 'Bright Berries,' by J. Comber ; 'Free-flowering Pelargoniums,' by Gerald Rushton ; and 'The Passing Show.' The coloured plates are *Saxifraga aizoon* and *Adonis vernalis*.

THE SCOTS PINE IN THE LEEDS DISTRICT

EDNA SISSONS, B.Sc.

THE life cycle of the Pine is described in textbooks, such as Coulter and Chamberlain's *Morphology of Gymnosperms*, but it is often useful to know the approximate date upon which material should be collected locally to illustrate particular stages. During 1935-36 material of the Scots Pine (*Pinus sylvestris* L.) was collected from Fewston, near Leeds, and the following data apply entirely to this locality.

It is well known that the morphology of this plant is peculiar in that the leaves borne directly on the extending shoots are merely small brown scales, whilst in the axils of these the buds grow out during the same season as bifoliar spurs, bearing a series of basal scale leaves followed by two green, needle-like leaves. Towards the end of the extension shoot, the terminal bud and a few of the axillary buds are more massive; these are more complex structures in which buds are already present in the axils of the scale leaves. In the following season these massive buds grow out into branches repeating the morphology of the main shoot. The male cones occur in the axils of some of the lower scales of a shoot and in position correspond with bifoliar spurs, whilst the female cones are formed in the axils of scales towards the end of the shoot and in position are more comparable with long shoots.

The male cones are present within the complex buds before the winter season, but are not exposed until the buds extend into the new shoots in the spring. By the end of June or early July, these cones are mature and the pollen is shed. The female cones on the other hand remain on the trees for three years. Like the male, they are present in the complex buds and are only exposed with extension of the shoot in the spring. During this first summer pollination of the ovules is effected, but this is not followed by fertilisation until July of the second year. By the autumn the embryos are well developed in the seeds, but these are not shed until the cones dry and the scales separate during the summer of the third year. So that three complete years elapse from the time of laying down the initials of the female cones and the dispersal of the seed.

As in the case of any flowering plant there is naturally some variation in the time at which any individual cone may reach a particular stage, but the following dates were recorded during the 1935-36 season.

Buds formed during 1934 contained young cones during

the winter and were first collected on May 3rd, 1935, whilst they were still enclosed in the scale leaves of the bud.

Male Cones.

Some pollen in the tetrad stage, May 3
some still in the spore mother
cell stage.

Grains winged but still in May 13
tetrads. First prothallial cell.

Second prothallial cell. May 19

Antheridial cell. June 8

Dehiscence of pollen sacs. June 14

Growth of pollen tube.

Female Cones.

The ovule has the nucellus and integument, and the megaspore mother cell develops at about this time.

Pollination.

June 25 Free nuclei in the megaspore.

Rest in this condition during the winter.

SECOND SEASON

Pollen tube resumes growth. April 19

May 25 Centripetal cell formation to give rise to the tissue of the gametophyte.

The stalk and generative cells June 14
pass into the pollen tube.

June 26 Fully developed archegonia. The ventral canal cell cut off and the cytoplasm of the central cell has changed from the less dense 'alveolar' stage to the denser 'proteid vacuole stage.'

Division of generative cell into July 3
two male cells.

Archegonia ready for fertilisation and sunken in the prothallus owing to food stored in prothallial tissues as endosperm.

Fertilisation.

Proembryo stages.

July 11 Suspensor.

July 17 Suspensor and embryonal tubes.

July 24-30 Embryo an ovoid mass.

Aug. 12 Rudiments of cotyledons and radicle.

Sep. 3 Embryo well developed.

THIRD SEASON

Seeds shed.

The large archegonia are well shown in material collected in early July and fixed. By this stage the nucellus has been almost entirely absorbed into the prothallus as the food storage of the endosperm and all that remains of it is a small

cap of brown tissue at the micropylar end. The prothallus readily separates out as an oval white mass, which may be cut longitudinally into thick sections, which clear in Eau de Javelle to show the details of the archegonium, with the neck cells well sunken in the swollen endosperm tissue. Archegonia sectioned and made into stained preparations at about this period also show very strikingly the change referred to in the time-table above, from the 'alveolar' to the 'proteid vacuole' stage when globules in the central cell stain deeply. This change is indicative of the stage of the archegonium, as the denser condition indicates maturity. Owing to individual variations, both these types and early stages in development following fertilisation are likely to be found in material collected on the same day.

WHITBY AND DISTRICT DIPTERA RECORDS, 1937

H. BRITTEN, F.R.H.S.

DURING late August and early September of this year two eminent 'Diperists,' F. W. Edwards, M.A., D.Sc., F.R.E.S., Department of Entomology, British Museum, and C. A. Cheetham, F.R.E.S., Austwick, spent a short holiday near Sandsend. The writer was able to accompany these gentlemen on several occasions, especially in Mulgrave Woods and the Hole of Horcum. Mr. Edwards very kindly forwarded me a list of Diptera captured with the exception of the 'Craneflies of Mulgrave Woods' which was the subject of a special paper by himself, *Naturalist*, 1937, pp. 253-254. Whilst writing up the notes on Mr. Edwards' list, I deemed it advisable to include records of Diptera captured by my father, H. Britten, F.R.E.S., when on visits to Whitby, also my own personal records. To keep the paper within reasonable limits, I propose to confine it to those records which are additions to the County or Vice-County 62 lists, the usual dagger and asterisk denoting these respectively. It is interesting to note that two species *Gampsocera inornata* Coste and *Hylephila unistriata* Zett. are additions to the British List.

My thanks are due to the above gentlemen for lists of their captures, also for the determination of material sent to them at various times. To W. J. Fordham, M.R.C.S., L.R.C.S., D.P.H., Barmby Moor, I am indebted for the information so freely given regarding the additions to the respective lists.

†*Bolitophila occlusa* Edw. Mulgrave Woods, 1937, F.W.E. Only known from the New Forest.

†*Macrocera anglica* Edw. Mulgrave Woods, 1937, F.W.E.

†*Exechia indecisa* Walk. Mulgrave Woods, 1937, F.W.E.

†*E. clypeata* Lundst. Mulgrave Woods, 1937, F.W.E.

†*Phronia cinerascens* Winn. Beckhole, 1/6/36, H.B.

- †*Mycetophila finlandica* Edw. Beckhole, 1/6/36, H.B.
 †*Crypteria limnophiloides* Bergr. Goathland, 4/9/37, F.W.E. Occurs in Nottinghamshire and Cheshire.
 †*Eustalomyia histris* Zett. Mulgrave Woods, 1937, F.W.E. Occurs in Nottinghamshire and Lancashire.
 †*E. festiva* Mg. Mulgrave Woods, 1937, F.W.E. Occurs in Nottinghamshire.
 †*Pegomyia univittata* v. Ros. Hole of Horcum, 31/8/37, F.W.E. Occurs in Nottinghamshire.
 †*Oxyceza dives* Lw. Hole of Horcum, 12/6/37, H.B. Very rare in Britain.
 †*Tabanus sudeticus* Zbr. Hole of Horcum, 4/8/37, H.B.
 †*Phytomyza atricornis* Mg. Whitby, 16/7/37, em. 19/7/37, H.B., ex. *Sonchus asper*.
 †*P. albipes* Mg. Saltwick, 1/6/37, em. 6/7/37, H.B., ex. *Ranunculus sceleratus* L.
 †*Putioniella marsupialis* Lw. Helwath Beck, 4/7/37, H.B.
 †*Bucentes maculata* Stg. Mulgrave Woods, 6/5/35, H.B., senr.
 †*Drosophila subobscura* Coll.M.S. Whitby, 17/11/35, H.B., senr.
 †*Elachyptera tuberculifera* Coste. Mulgrave Woods, 11/11/35, H.B., senr.
 †*Scatophaga litorea* Fln. Whitby, 10/11/35, H.B., senr.
 †*Anisopus zettustedti* Edw. Mulgrave Woods, 1937, F.W.E. Occurs in Nottinghamshire.
 †*Gampsocera inornata* Zett. Mulgrave Woods, 11/11/35, H.B., senr. First British Record.
 †*Hylephila unistriata* Coste. Mulgrave Woods, 6/5/35, H.B., senr. First British Record.
 **Mycomyia cinerascens* Zett. Mulgrave Woods, 1937, F.W.E.
 **Neuratelia nemoralis* Mg. Beckhole, 1/6/35, H.B.
 **Boletina plana* Walk. Beckhole, 1/6/35, H.B.; Mulgrave Woods, 1937, F.W.E.
 **B. basalis* Mg. Beckhole, 1/6/35, H.B.
 **Exechia fusca* Mg. Whitby, 1/2/35, H.B.; Mulgrave Woods, 6/5/35, H.B., senr.
 **E. subulata* Winn. Goathland, 4/9/37, F.W.E.
 **Rhymosia fenestralis* Mg. Whitby, 16/11/35, H.B., senr.; Beckhole, 18/7/36, H.B.
 **R. fasciata* Mg. Whitby, 14/11/35, H.B., senr.
 **Mycetophila luctuosa* Mg. Mulgrave Woods, 11/11/35, H.B., senr.
 **Tipula (oreomyza) pagana* Mg. Hole of Horcum, 31/8/37, F.W.E.
 **Rhamphomyia spinipes* Fln. Mulgrave Woods, 1937, F.W.E.; Hole of Horcum, 31/8/37, F.W.E.
 **R. hirsutipes* Coll. Hole of Horcum, 31/8/37, F.W.E.
 **R. dentipes* Zett. Egton Bridge, 1/6/35, H.B.
 **Haemmomyia grisea* Fln. Hole of Horcum, 31/8/37, F.W.E.; Goathland, 4/9/37, F.W.E.
 **Rhypholophus varius* Mg. Goathland, 4/9/37, F.W.E.
 **Limnophora exsurta* Pand. Kettlethness, 1937, F.W.E.
 **Bibio nigriventris* Hal. Whitby, 10/11/35, H.B., senr.
 **B. varipes* Mg. Mulgrave Woods, 6/5/35, H.B., senr.
 **Disca nebulosa* Mg. Mulgrave Woods, 11/11/35, H.B., senr.
 **Odontomyia viridula* F. Fen Bog, 11/7/37, H.B.
 **Atherix ibis* F. Helwath Beck, 14/7/35, H.B.
 **Borborus equinus* Fln. Whitby, 16/11/35, H.B., senr.
 **B. geniculatus* Macq. Whitby, 16/11/35, H.B., senr.
 **Aphiochaeta rufipes* Mg. Grosmont, 12/2/36, A. E. Barrett, ex. Beehive refuse.
 **Fawnia manicata* Mg. Mulgrave Woods, 6/3/35, em. 1/4/35, N.B.
 **Elachyptera cornuta* Fln. Mulgrave Woods, 11/11/35, H.B., senr.
 **Rhysocephala rufipes* F. Fylingdales Moor, 14/7/35, H.B.

FURTHER ARACHNIDA RECORDS FROM THE WHITBY DISTRICT

H. BRITTEN, F.R.H.S., AND W. FALCONER, F.R.E.S.

CONTINUING his investigation of the Whitby district, Mr. Britten has again this year had a most successful season, extending his search to other localities in the area and discovering specimens of four rare spiders, which are valuable additions to the county fauna, viz. *Araneus cucurbitinus* Clerck. var. *opisthographus* Keeler, *Singa hamata* Cb., *Philodromus emarginatus* Schrnck., and *Trochosa spinipalpis* F. Cb., and two others, new to V.C. 62, viz. *Thyreosthenius biovatus* Cb. and *Porrhomma thorellii* Herm. He wishes to acknowledge, with sincere thanks, his obligation to Dr. A. R. Jackson for identifying his captures.

In view of Mr. Britten's excellent results in the past two years, opportunity may here be taken to indicate and acknowledge the good work done in the district by previous naturalists. For this purpose note-books, dating from 1903, containing the data of spiders received for identification, have been consulted and pertinent records extracted. These have been added to the following list, which altogether contains the names of 34 spiders and 3 false-scorpions not in our first list in *The Naturalist*, October 1936; the grand total becoming 187 spiders, 12 harvestmen, and 4 false-scorpions—203 species.

The initials employed: R.A.T. refer to the Rev. R. A. Taylor, T.S. to T. Stainforth, W.P.W. to W. P. Winter, and W.F. to W. Falconer. Other abbreviations are r., rare, c., common, u., uncommon, l., local, imm., immature, ad., adult, exs., examples, w., widespread. The species new to the county are marked with a dagger and those not on our first list with an asterisk.

ARANEÆ

- Amaurobius ferox* Walck. Whitby, ♂, 7/4/37.
A. similis Bl. Whitby, ♂, 1/3/37.
Dictyna arundinacea Linn. Hellwath Beck, ♂ ♀, 6/6/37; Hole of Horcum, ♂, 12/6/37; W.F., Ringingkeld Bog, Cloughton, ad. ♀, many imm. exs. of both sexes, 15/8/05; Levisham, ♀, 15/7/06.
D. latens Fabr. W.F., Levisham, ad. and imm., Levisham, 15/7/06.
 **Oonops pulcher* Templ. W.F., Boulby, 3 ♀s, 2/8/09; Hayburn Wyke, several ♀s, 17/8/05; w. and c. in some places.
Harpactes hombergii Scop. Mulgrave Woods, ♂, 1/6/37; Robin Hood's Bay, ♀, 19/6/37.
Drassodes lapidosus Walck. W.F., Ringingkeld Bog, 15/8/05.
 **D. signifer* C. Koch (*troglydytes* C.K.). R.A.T., Ringingkeld Bog, ♂, 19/5/14; w. and c. in some places.
Scotophaeus blackwallii Thor. Whitby, ♀, 1/3/37.
Theridion sisypium Clerck. Hellwath Beck, 2 ♂s, ♀, 6/6/37.
T. ovatum Clerck. Hellwath Beck, ♂, 6/6/37; Whitby, ♂, 2 ♀s, 18/6/37.

- Theridion pallens* Bl. R.A.T., Ringingkeld Bog, ♂, 29/9/13.
- **Theonoe minutissima* Cb. R.A.T., Ringingkeld Bog, 2 ♂s, ♀, 29/9/13. Very minute and rare, but reported abundant on some N. Yorkshire moors and some places in western V.C. 63.
- Pholcomma gibbum* Westr.—R.A.T., Ringingkeld Bog, 2 ♂s, 3 ♀s, 29/9/13; T.S., Hayburn Wyke, ♂, 31/5/19, also W.F., ♂, 6 ♀s, 17/8/05.
- Robertus lividus* Bl. Sleights, ♀, 2/10/37; R.A.T., Ravenscar, ♂, 12/5/13; Ringingkeld Bog, ♂, 29/9/13.
- Maso sundevallii* Westr. R.A.T., Ringingkeld Bog, ♀, 29/9/13; W.P.W., Egton, 1/8/14; T.S., Hayburn Wyke, 2 ♀s, 31/5/19, also W.F., 3 ♀s, 16/8/04.
- Ceratinella brevis* Westr. R.A.T., Ringingkeld Bog, ♂, 16/4/14; W.F., Hayburn Wyke, ♀, 17/8/05.
- C. brevipes* Westr. Skelder, ♂, 22/2/37; Sleights, ♂, 2/10/37; T.S., Hayburn Wyke, ♂, 1/5/09; R.A.T., Ringingkeld Bog, 7 ♀s, 29/9/13.
- **Lophocarenum mengii* Sim. R.A.T., Ringingkeld Bog, 7 ♂s, 6 ♀s, 29/9/13; r., l., often plentiful where it occurs, as on some Huddersfield moors.
- L. nemorale* Bl. R.A.T., Ringingkeld Bog, 4 ♂s, 8 ♀s, 29/9/13.
- **Minyriolus pusillus* Wid. R.A.T., Ringingkeld Bog, 2 ♂s, 4 ♀s, 29/9/13 and 2 ♂s, 16/4/14; w., but not common.
- Metopobactrus prominulus* Cb. Hellwath Beck, ♂, 5/7/37.
- **Aræoncus humilis* Bl. Hellwath Beck, ♂, 24/10/36; w., usually c.
- **Troxochrus hiemalis* Bl. R.A.T., Ringingkeld Bog, 2 ♂s, 2 ♀s, 29/9/13; w., c. in some places.
- Tiso vagans* Bl. Hellwath Beck, ♂, 6/6/37.
- Plasiocrærus fuscipes* Bl. Mulgrave Woods, ♂, 1/3/37.
- **Thyreosthenius biovatus* Cb. Hellwath Beck, 4 ♂s, 2 ♀s, 24/10/36; 2 ♂s, 26/9/37. The only other Yorkshire record, Denby Dale, Huddersfield, w. in the nests of the wood ant, *Formica rufa*.
- Colobocyba pallens* Cb. Skelder, 3 ♂s, 22/2/37; R.A.T., Ringingkeld Bog, ♀s, 16/4/14.
- **Dicymbium nigrum* Bl. Mulgrave Woods, ♀, 1/2/37; W.F., Ringingkeld Bog, ♀, 14/8/04; w., c. in some places.
- D. tibiale* Bl. R.A.T., Ringingkeld Bog, ♂, 2 ♀s, 16/4/14.
- **Wideria antica* Bl. W.F., Ringingkeld Bog, ♀s, 15/8/08, also R.A.T., 29/9/13; w., but not in quantity.
- Trachynotus nudipalpis* Westr. Mulgrave Woods, ♀, 1/3/37; Sleights, ♀, 2/10/37.
- Walckenaera acuminata* Bl. Hole of Horcum, ♀, 8/5/37; R.A.T., Ringingkeld Bog, 2 ♀s, 19/10/13.
- **Cornicularia unicornis* Cb. R.A.T., Ringingkeld Bog, ♀, 16/4/14, also W.F., ♀, 15/8/05; w. and c. in some places.
- C. cuspidata* Bl. T.S., Hayburn Wyke, 31/5/19, also W.F., ♂, 4 ♀s, 17/8/05, and Ringingkeld Bog, ♀s, 14/8/04.
- **Leptorhoptrum huthwaitii* Cb. W.F., Hayburn Wyke, ♂, ♀, 17/8/05; w. and c. in some places.
- Gonatum rubens* Bl. Hole of Horcum, 2 ♀s, 31/8/37; Hellwath Beck, 2 ♂s, 26/9/37; Sleights, 2 ♂s, 2/10/37; R.A.T., Ringingkeld Bog, many ♀s, 18/10/13; W.P.W., Egton, 2 ♂s, 1/8/14; Falling Foss, 4 ♂s, ♀, 3/8/14.
- G. rubellum* Bl. Mulgrave Woods, 4 ♂s, 2 ♀s, 31/8/37; Hellwath Beck, 2 ♂s, 2 ♀s, 26/9/37; W.F., Hayburn Wyke, 4 ♂s, 5 ♀s, 17/8/05.
- Hypomma bituberculatum* Wid. W.F., Ravenscar, ♀, 24/8/04.

- Dismodicus bifrons* Bl. Littlebeck, ♂, 11/5/37; Hellwath Beck, ♀, 6/6/37; T.S., Hayburn Wyke, ♂, 31/5/19; R.A.T., Staintondale, ♀, 10/7/14; W.P.W., Falling Foss, 3/8/14; W.F., Ringingkeld Bog, 2 ♀s, 14/8/04.
- **Lophomma punctatum* Bl. W.F. Ringingkeld Bog, 3 ♀s, 14/8/04; Hygrophilous, c. in many places. Records many in V.C. 61 and 63, but very few in V.C. 62.
- Erigone atra* Bl. Littlebeck, ♂, 17/5/37; Hellwath Beck, ♂, 6/6/37; Hole of Horcum, 2 ♂s, 12/6/37. This and the next two species are aeronauts, w. and c.
- E. dentipalpis* Wid. Whitby, ♂, 21/10/36, ♂, 1/10/37; Hole of Horcum, 2 ♂s, ♀, 12/6/37; Hellwath Beck, ♀, 26/9/37.
- **E. promiscua* Cb. Fylingdales Moor, ♂, 5/9/36; Hole of Horcum, ♂, 4/7/37; Mulgrave Woods, ♂, 27/9/37; W.F., Ringingkeld Bog, ♂, 14/8/04.
- Gongylidium rufipes* Linn. Littlebeck, 2 ♂s, 17/5/37; W.F., Levisham, ♀, 15/7/06.
- **Edothorax gibbosus* Bl. Mulgrave Woods, ♂, 27/9/37; rather late in the year for this adult; R.A.T., Ringingkeld Bog, 2 ♂s, 19/5/14.
- **E. apicatus* Bl. Hole of Horcum, ♀, 31/8/37. Nowhere c. The only other V.C. 62 record is Coatham Marshes.
- **Gongyliidium vivum* Cb. W.F., Ringingkeld Bog, ♂, 14/8/04, also R.A.T., ♂, 29/9/13; W.F., Hayburn Wyke, ♀, 17/8/05; u. and l.
- Porrhomma microphthalmum* Cb. W.F., Ringingkeld Bog, ♀, 15/8/05.
- **P. thorellii* Herm. Hellwath Beck, ♀, 6/6/37. New to V.C. 62. All other county records from V.C. 63; cellars, sewage works, and outdoor situations.
- Sintula cornigera* Bl. R.A.T., Ringingkeld Bog, 3 ♀s, 29/9/13; T.S., Hayburn Wyke, ♀, 31/5/19.
- Hilaira excisa* Cb. Sleights, 4 ♂s, 2/10/37; W.F., Ringingkeld Bog, ♀, 15/8/05.
- **Halorates reprobus* Cb. W.F., Skinningrove shore, ad. ♂ and imm. exs., both sexes, 12/8/09; l. coast frequenting. Other county records, Hull district and Grangetown.
- Microneta viaria* Bl. W.F., Hayburn Wyke, ♀, 17/8/05.
- Agyneta conigera* Cb. W.F., Levisham, ♀s, 15/7/06.
- Aprolagus saxatilis* Bl. R.A.T., Ringingkeld Bog, ♀, 29/9/13.
- Meioneta rurestris* C. L. Koch. W.F., Ringingkeld Bog, ♂, ♀s, 14/8/04.
- Centromerus dilutus* Cb. Sleights, 2 ♂s, 2/10/37; R.A.T., Ringingkeld Bog, 3 ♂s, 8 ♀s, 29/9/13.
- Oreonetides abnormis* Bl. Sleights, 2 ♀s, 2/10/37.
- Macrargus rufus* Wid. Sleights, 2 ♂s, 2 ♀s, 2/10/37.
- Drapetisca socialis* Sund. Hellwath Beck, 2 ♂s, 2 ♀s, 26/9/37; Goathland, ♀, 30/9/37; Sleights, 2 ♂s, ♀, 2/10/37.
- **Bolyphantes alticeps* Sund. Hellwath Beck, ♀, 24/10/36. A northern spider, often plentiful where it occurs.
- B. luteolus* Bl. Hellwath Beck, ♀, 26/9/37; Whitby, ♂, 1/10/37.
- Leptyphantes minutus* Bl. W.P.W., Hole of Horcum, 5/8/14.
- L. cristatus* Menge. W.F., Levisham, ♀, 15/7/06.
- L. ericaeus* Bl. W.F., Ravenscar, ♀s, 18/8/04.
- L. zimmermannii* Bertk. Hellwath Beck, ♂, 5/7/37; Sleights, 2 ♂s, ♀, 2/10/37; W.F., Hayburn Wyke, 3 ♂s, 16/8/04; Ringingkeld Bog, ♀s, 15/8/04.
- L. tenuis* Bl. Whitby, ♂, ♀, 18/6/37; Hole of Horcum, ♂, 12/6/37; Hellwath Beck, 2 ♀s, 24/9/37; W.F., Ravenscar, ♂s, 18/8/04.

- Poecilometes variegata* Bl. W.F., Hayburn Wyke, 5 ♀s, 16/8/04 ; Ravenscar, 3 ♀s, 18/8/04.
- Labulla thoracica* Wid. Sleights, ♂, 2/10/37.
- Linyphia triangularis* Clerck. Mulgrave Woods, 2 ♀s, 25/8/37 ; Hellwath Beck, 2 ♀s, 26/9/37 ; W.F., Hayburn Wyke, 17/8/05 ; Ringingkeld Bog, 15/8/05.
- L. montana* Clerck. Beckhole, ♂, 12/2/37 ; W.F., Hayburn Wyke, ♀, 17/8/05.
- L. clathrata* Sund. Mulgrave Woods, ♂, 1/2/37.
- L. pusilla* Sund. Hellwath Beck, 2 ♂s, 2 ♀s, 6/6/37.
- L. insignis* Bl. Mulgrave Woods, 2 ♂s, 2 ♀s, 25/8/37 ; Hellwath Beck, 2 ♂s, 2 ♀s, 26/9/37 ; Sleights, ♂, 2/10/37 ; W.P.W., Egton, 2 ♀s, 1/8/14 ; Falling Foss, 1 ♂, 6 ♀s, 3/8/14.
- Stylophora concolor* Wid. Whitby, 3 ♀s, 18/6/37 ; Hellwath Beck, ♀, 26/9/37.
- S. nigrinus* Westr. Hellwath Beck, ♂, ♀, 6/6/37, ♂, 2 ♀s, 26/9/37 ; Mulgrave Woods, ♀, 29/9/37 ; T.S., Hayburn Wyke, 2 ♂s, 31/5/19.
- S. pullatus* Cb. Hellwath Beck, 3 ♀s, 6/6/37.
- Bathypantes gracilis* Bl. W.F., Ravenscar, both sexes, 18/8/04.
- Pachygnatha clerckii* Sund. Hellwath Beck, ♂, 1/5/37 ; R.A.T., Ringingkeld Bog, ♀, 15/10/13 ; W.P.W., Falling Foss, ♀, 3/8/14.
- P. degeerii* Sund. Whitby, 2 ♂s, ♀, 1/3/37 ; Hellwath Beck, ♂, ♀, 26/9/37 ; R.A.T., Ringingkeld Bog, 2 ♀s, 21/9/13 ; W.P.W., Falling Foss, 2 ♀s, 3/8/14 ; W.F., Ravenscar, ♀, 14/8/04.
- Tetragnatha extensa* Linn. Hellwath Beck, 2 ♂s, 2 ♀s, 6/6/37.
- Meta segmentata* Clerck. Whitby, 2 ♂s, ♀, 1/3/37 ; Hellwath Beck, 3 ♂s, ♀, 26/9/37 ; Mulgrave Woods, 2 ♂s, 2 ♀s, 27/9/37 ; Sleights, ♂, 2/10/37.
- M. merianæ* Scop. Goathland, ♀, 30/9/37 ; Sleights, ♂, 2/10/37.
- **M. menardi* Latr. Whitby, 21/10/36. Other V.C. 62 records, Lonsdale, ♂, and near Ayton station, ♀ ('not typical'), Dr. J. W. Harrison. w. in caves, cellars and ruins.
- Zygiella atrica* C. L. Koch. Hellwath Beck, ♂, 2 ♀s, 26/9/37 ; Sleights, ♂, 2/10/37.
- Z. x-notata* Clerck. W.P.W., Egton, ♂, 1/8/14 ; Falling Foss, 3/8/14.
- Nesticus cellulanus* Clerck. W.F., Hayburn Wyke, both sexes, 17/8/05 ; Levisham, ♀, 15/7/06.
- Araneus diadematus* Clerck. Hellwath Beck, ♀, 6/6/37 ; T. S., Hayburn Wyke, 23/10/20.
- A. quadratus* Clerck. Hole of Horcum, 12/6/37, 2 ♀s ; Hellwath Beck, ♀, 26/9/37.
- A. cucurbitinus* Clerck. Hellwath Beck, ♂, 6/6/37.
- †*A. cucurbitinus* Clerck. var. *opisthographus* Keeler. Robin Hood's Bay, ♂, 19/6/37. The first county record for this variety, probably for want of examination to distinguish it from the type.
- †*Singa-hamata* Cb. Fylingdale's Moor, an imm. ♀, 5/9/36. Adult examples are needed to establish this record, but the situation is a suitable one ; r. and very l. in the south of England, nowhere common, with a wide distribution on the Continent ; has occurred in Cumberland. New to the county.
- Ero furcata* Vill. W.F., Ringingkeld Bog, 2 ♀s, 15/8/05 ; also R.A.T., ♀, 29/9/13 ; W.F., Levisham, 15/7/06.
- Oxyptila trux* Bl. Hellwath Beck, ♂, 6/6/37 ; W.F., Ringingkeld Bog, both sexes, 15/8/05 ; also R.A.T., 2 ♂s, ♀, 19/10/13.

- Xysticus cristatus* Clerck. Hole of Horcum, ♀, 8/5/37; Hellwath Beck, 2 ♂s, 2 ♀s, 26/9/37; W.P.W., Falling Foss, ♂, 3/8/14; R.A.T., Staintondale, ♂, ♀, 19/7/14.
- **X. sabulosus* Hahn. Hole of Horcum, ♀, 8/5/37. Previous Yorkshire records, V.C. 62, Eston, 20/4/11, and V.C. 61, Allertorpe Common on two occasions.
- Philodromus cespiticolis* Walck. Whitby, ♂, 18/6/37.
- †*P. emarginatus* Schnrk. Wragby Wood, imm. ex., 6/6/36; Hellwath Beck, ad., ♀, 5/7/37. New to the county. Not c. but ranging north to the Grampians, absent from Midlands and S. Scotland. (*Vide Naturalist*, October, p. 255.)
- Chiracanthium erraticum* Walck. Fylingdales Moor, ♂, 2 ♀s, 5/9/36; Hellwath Beck, ♂, 26/9/37; W.F., Ringingkeld Bog, 4 ♂s, 10 ♀s, 15/8/05, also R.A.T., ♀, 29/9/13; T.S., Foulside, Robin Hood's Bay, ♀.
- Anyphæna accentuata* Walck. Goathland, ♂, 30/9/37.
- Clubiona reclusa* Cb. Littlebeck, ♀, 17/5/37; W.F., Ringingkeld Bog, ad. and imm. exs., 15/8/05; Hayburn Wyke, ♂, ♀, 17/8/05.
- **C. stagnatilis* Kulcz (grisea L. Koch). R.A.T., Ringingkeld Bog, 29/9/13; w. and c. in some places. In Yorkshire most stations in V.C. 61.
- **C. terrestris* Westr. Hellwath Beck, ♂, 26/9/37; W.F., Ravenscar, ♂, 18/8/04; w. and c.
- C. trivialis* C. L. Koch. Hellwath Beck, ♀, 6/6/37; W.F., Ringingkeld Bog, ♂, 15/8/05.
- **C. brevipes* Bl. Hellwath Beck, ♂, 6/6/37; Hole of Horcum, ♂, 4/7/37; w., but Yorkshire records comparatively few.
- C. compta* C. Koch. Hellwath Beck, 2 ♂s, 1/5/37; T.S., Hayburn Wyke, 31/5/19; W.P.W., Falling Foss and Littlebeck, ♀s, 3/8/14.
- C. diversa* Cb. R.A.T., Ringingkeld Bog, 2 ♂s, 7 ♀s, 29/9/13; Staintondale, ♀, 10/7/14.
- Zora spinimana* Sund. W.F., Levisham, ♀ and imm. exs., 15/7/06.
- Micaria pulicaria* Sund. Hellwath Beck, ♀, 1/5/37.
- Tegenaria derhamii* Scop. Beckhole, ♀, 12/2/37.
- Coelotes atropos* Walck. Hellwath Beck, 3 ♀s, 1/5/37; Sleights, ♀, 2/10/37; R.A.T., Bloody Beck, ♂s, ♀s, 16/5/13; W.F., Boulby, ♀, 9/8/09.
- **Antistea elegans* C. Koch. Sleights, ♀, 2/10/37; W.F., Ringingkeld Bog, ♀s, 14/8/04; w. and c. sphagnum bogs and other damp places.
- Hahnina montana* Bl. T.S., Hayburn Wyke, ♀, 31/5/19, also W.F., 4 ♂s, 13 ♀s, 17/8/05; Levisham, ♀, 15/7/06.
- Pirata piraticus* Clerck. Fylingdales Moor, 2 ♀s, 5/9/36.
- Trochosa terricola* Thor. Whitby, ♀, 16/5/37; W.F., Ravenscar, 14/8/04 and Hayburn Wyke, 17/8/05, ♀s; R.A.T., Staintondale, ♀, Ringingkeld Bog, ♀, 16/4/14; T.S., Beast-undercliff, ♀, 1/8/10.
- †*T. spinipalpis* F. Cb. Hellwath Beck, 4 ♀s, 1/5/37. Difficult to discriminate without the male. New to the county. Known from a few places from Dorset to Northumberland and Cumberland, sometimes in quantity.
- **T. picta* Hahn. Boulby, slag heaps, abundant. *Vide Naturalist*, August, 1905, p. 252. Protectively coloured, in sandy situations (chiefly maritime), w., 1.
- **Tarentula barbipes* Sund. (andrenivora Walck). Roxby, ♂, 24/4/37. F. Readman. Heather clad moors, not noted commonly in Yorkshire.
- T. pulverulenta* Clerck. Hole of Horcum, ♀, 8/5/37.

- Lycosa amentata* Clerck. T.S., Beast-undercliff, 2♀s, 1/8/10; W.F., Hayburn Wyke, 17/8/05.
- L. nigriceps* Thor. Hellwath Beck, ♂, 26/9/37; W.F., Ringingkeld Bog, ♀s, 14/8/04, also R.A.T., ♂, 4 ♀s, 29/9/13.
- Neon reticulatus* Bl. W.F., Ringingkeld Bog, ♀, 15/8/05.
- **Heliophanus cupreus* Walck. W.F., Levisham, ♀, 15/7/06; w., but rare in Yorkshire and the North.
- **Heteropoda regia* Fabr. Whitby, ♂, 10/3/36, an exotic species from a bunch of bananas.

OPILIONES

- Nemastoma lugubre* Müll. Sleights, ♂, 2/10/37; T.S., Beast-undercliff, 1/8/04, Robin Hood's Bay, 18/7/21; W.P.W., Egton, 1/8/14; Falling Foss, 3/8/14.
- N. chrysomelas* Herm. Sleights, ♂, 2 ♀s, 2/10/37; R.A.T., Stainton-dale, 21/9/13; W.P.W., Egton, 1/8/14; W.F., Levisham, 15/7/06.
- Mitopus morio* Fabr. Hole of Horcum, ♂, 31/8/37; Hellwath Beck, 3 ♂s, 26/9/37; W.P.W., Falling Foss, 3/8/14.
- Oligolophus agrestis* Meade. Hellwath Beck, 2 ♂s, 26/9/37; R.A.T., Ringingkeld Bog, both sexes, 29/9/13.
- O. tridens* C. L. Koch. Sleights, ♂, 2/10/37.
- Odiellus palpinalis* Herbst. Sleights, ♂, 2/10/37; R.A.T., Ringingkeld Bog, ♀, 29/9/13.
- Phalangium opilio* Linn. W.F., Ringingkeld Bog, both sexes, 14/8/04; Levisham, 15/7/06.
- Opilio parietinum* Degeer. Sleights, ♂, 2/10/37.
- Platybunus triangularis* Latr. Hole of Horcum, ♂, 31/8/37; Sleights, ♂, 2/10/37.
- Liobunum rotundum* Latr. Sleights, ♂, ♀, 2/10/37; W.F., Ringingkeld Bog, 14/8/04, and Levisham, both sexes, 15/7/06.

PSEUDOSCORPIONES

- **Chernes scorpioides* Herm. Barns Cliff, Harwood Dale, G. B. Walsh (*Naturalist*, May, 1924, p. 140). The only county record. Although noticed mainly from the South, the species is probably widely distributed in Britain among vegetable refuse, etc.
- **C. nodosus* Schranck. Saltersgate, from refuse in a cattle shed, 10/4/37. Another V.C. 62 record is R.A.T., Scarborough, 8 or 9 examples clinging to flies' legs in 1917.
- **C. dubius* Cb. T.S., Hayburn Wyke, one ex., -/8/19. Then new to V.C. 62, vide *Naturalist*, January, 1920, p. 43.
- Obisium muscorum* Leach. Skelder, 22/2/37; R.A.T., Whitby, 16/5/13, with cocoons; W.P.W., Egton, 1/8/14; Falling Foss, 3/8/14.

The Entomologist's Monthly Magazine for October contains: 'The British species of the Rufipes Group of *Pipunculus* (Diptera),' by J. E. Collin (*P. imparatus* Collin, England; *P. rufipes* Mg., England; *P. extricatus* Collin, England, Scotland, including Co. Durham); 'A New Species of *Aleochara* (Col. Staphylinidae),' by A. A. Allen (*A. phycophila* Allen, Studland, Dorset, by sifting seaweed); '*Psammochares rufus* Haupt., a Wasp new to Britain,' by G. M. Spooner (Gore Heath, Dorset); '*Humbertiella modesta* sp.n. (Mantidae) from Ranchi, Behar, India,' by W. B. R. Laidlaw; 'Investigations on Beetles associated with Carrion in Pannal Ash, near Harrogate. II,' by R. R. U. Kaufmann; 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; and several shorter notes.

YORKSHIRE HYPOCREALES

T. PETCH, B.Sc.

THE Hypocreales form a section of the group of fungi known as Pyrenomycetæ, fungi in which the spores are contained in asci which are enclosed in a globose or pyriform case, the perithecium. In general, the wall of the perithecium is black, and often hard and brittle (carbonaceous). The name is derived from the Greek pyren, the stone of a fruit, the wall of the perithecium representing the hard wall of the stone, while the soft internal mass of asci and spores corresponds to the kernel. From the other Pyrenomycetæ, the Hypocreales are separated by the colour and consistency of the wall of the perithecium, which is soft and fleshy, never carbonaceous, and brightly coloured, red, yellow, blue, or hyaline, never black.

In the course of a revision of the British Hypocreales, I have had occasion to examine many of the specimens which have been recorded for Yorkshire, and the following list gives the results of that examination, the species being arranged in the genera now adopted. Thus the list constitutes a revision of the section Hypocreaceæ in the *Fungus Flora of Yorkshire* (pp. 209-215), and provides reasons for the non-inclusion of some names and records in the recently-published *Catalogue of Yorkshire Fungi*. The synonyms cited are merely those which have been applied to Yorkshire specimens. The personal mark (!) has been affixed to the records of specimens which I have examined, and the words Herb. Kew and Herb. Brit. Mus. indicate where the specimen now is.

HYPONECTRIA Saccardo

Hyponectria buxi (Desm.) Sacc.; synonym *Trochila buxi* Capron. In leaves of box. Recorded as *Nectria rousseliana*, Sandsend, May, 1913, Herb. Kew! Also as *Trochila buxi*, Cloughton, near Scarborough. Recently collected at Helmsley, August, 1935! Kilnwick Percy, August, 1936! Buckden, September, 1936! Aldborough, E. Yorks., August, 1937!

BYSSONECTRIA Karsten

Byssonectria lateritia (Fr.) Petch; synonym *Hypomyces lateritius* (Fr.) Tul. Recorded from Scarborough on *Lactarius deliciosus*, and from Hebden Bridge on *L. torminosus* (as *Hypomyces torminosus*); no specimens seen.

PSEUDONECTRIA Seaver

Pseudonectria rousseliana (Mont.) Seaver. On leaves of box. Recorded in *Fungus Flora of Yorkshire* as *Lasionectria rousseliana* from Bulmer by Massee, but a specimen from Massee in Herb. Brit. Mus. is labelled Scarborough! Recently collected at Kilnwick Percy, August, 1936!

MELANOSPORA Corda

- Melanospora chionea* (Fr.) Corda. On pine needles. Recorded for Yorkshire from Bulmer; no specimens seen.
- M. parasitica* Tul. On entomogenous fungi. On *Spicaria (Isaria) farinosa*, Rawcliffe, August, 1934!
- M. zaniæ* Corda. On bananas, North Riding Laboratory of Pathology and Public Health, October, 1931 (E. W. Mason, in *Annotated Account of Fungi*, etc., List II, fasc. 2, p. 40).

SPHÆRODERMA Fuckel

- Sphæroderma fusisporum* Petch. On *Spicaria (Isaria) farinosa*, Saltaire, September, 1935 (W. P. Winter)!

NECTRIA Fries

- Nectria cinnabarina* (Tode) Fr. Common on dead branches, etc.
- N. coccinea* (Pers.) Fr. On dead branches and logs, common. Recently collected at Tanfield, on elm, May, 1935 (F. A. Mason)! Helmsley, on sycamore, August, 1935! Steeton, near Tadcaster, on poplar and sycamore, October, 1935 (W. G. Bramley)! Bolton Percy, on elder, August, 1936 (W. G. Bramley)! Buckden, on ash, September, 1936! Carperby, on elm, October, 1936 (W. G. Bramley)!.
- N. punicea* (K. and S.) Fr. On dead branches. On holly, Thirsk (J. G. Baker), Herb. Kew, as *N. aquifolii*! On holly, Mulgrave Woods, September, 1908, Herb. Kew, as *N. aquifolii*! On beech, Aberford, June, 1937 (W. G. Bramley)! On beech, Millington Wood, September, 1937!
- N. sinopica* Fr. On dead stems of ivy. Kingthorpe Woods, near Pickering, September, 1930 (British Mycol. Soc.); Austwick, September, 1934! Kilnwick Percy, August, 1936! Carperby, October, 1936 (W. G. Bramley)! Millington Wood, September, 1937!
- N. aquifolii* (Fr.) Berk.; synonym *N. inaurata* B. and Br. On dead stems of holly. Scarborough (Masee), Herb. Brit. Mus., as *N. inaurata*! Kilnwick Percy, August, 1936! Specimens in Herb. Brit. Mus. as *N. aquifolii* from Mulgrave Woods, September, 1913, and Scarborough (Masee) are *N. coccinea*!
- N. coryli* Fuckel. On dead stems of woody plants. Rokeby, September, 1933!
- N. mammoidea* Phill. and Plowr. On dead stems, gorse, elm, etc. Scarborough (Masee), Herb. Brit. Mus.! Mulgrave Woods, May, 1911, Herb. Brit. Mus.! Rokeby, September, 1933! Allerthorpe Common, August, 1936!

* SPHÆROSTILBE Tulasne

- Sphærostilbe flavo-viridis* Fckl. On dead wood, with *Melanomma pulvis-pyrius*, Allerthorpe Common, September, 1937 (W. G. Bramley)!

DIALONECTRIA Cooke

- Dialonectria peziza* (Tode) Cke.; synonym *Nectria aurea* Cke. Generally distributed; on decaying logs, fungi, etc. Nun Appleton, October, 1934 (W. G. Bramley)! Helmsley, September, 1935! Coxwold, August, 1937 (W. G. Bramley)!
- D. sanguinea* (Bolt.) Cke.; synonym *Nectria episphæria* (Tode) Fr. Generally distributed, on effete pyrenomycetæ and dead wood. Bolton Percy, on elder, March, 1935 (W. G. Bramley)! On *Diatrype stigma*, Bolton Percy, February, 1936 (W. G. Bramley)! Millington Wood, August, 1936, September, 1937!

- D. desmazierii* (de Not.) Petch. On leaf scars on twigs of box. Buckden, September, 1936 !
- D. galligena* (Bres.) Petch. On cankers on apple branches. Recorded on good authority in the *Catalogue of Yorkshire Fungi* for all the county divisions, but I have not seen Yorkshire specimens.

LASIONECTRIA Cooke

- Lasionectria flavida* (Cda.) Cooke. On dead wood. Scarborough (Massee), Herb. Brit. Mus. ! Nun Appleton, April, 1935 (W. G. Bramley) !

NECTRIELLA Nitschke

- Nectriella funicola* (B. and Br.) Petch. On rotting cardboard, Melton Wood, near Cadeby, September, 1901 (Massee and Crossland), Herb. Kew !

HYPHONECTRIA Saccardo

- Hyphonectria aureo-nitens* (Tul.) Petch. On *Stereum*. Hubberholme, September, 1936 ! Keld, Swaledale, October, 1936 (W. G. Bramley) !

HYPOMYCES Tulasne

- Hypomyces ochraceus* (Pers.) Tul. ; synonym *H. terrestris* Plowr. and Boud. Recorded under the latter name from Hebden Bridge, and under the former from Melton Wood. As the Melton Wood specimen was said to be on an agaric, the record is, no doubt, incorrect, unless it refers to the conidial stage only. No Yorkshire specimen of the perithecia seen. Conidial and chlamydospore stages, Hubberholme, September, 1936 ! Allerthorpe Common, September, 1937 !
- H. rosellus* (A. and S.) Tul. Generally distributed, usually on decaying *Stereum*. Scarborough, October, 1881 (Massee), Herb. Birmingham University ! Carperby, October, 1936 (W. G. Bramley) ! Recorded from Beckwithshaw, Staynor Wood near Selby, Mulgrave, Owston, Melton Wood.
- H. aurantius* (Pers.) Tul. On decaying fungi, *Polyporus*, *Stereum*, *Panus*, etc. Scarborough, October, 1881 (Massee), Herb. Birmingham University ! Mulgrave Woods, September, 1930 (British Mycol. Soc.), Herb. Kew ! Nun Appleton, April, 1935 (W. G. Bramley) ! Askham Bog, June, 1936 (W. G. Bramley) ! Steeton, Tadcaster, November, 1936 (W. G. Bramley) ! Doncaster, August, 1937 (W. G. Bramley) ! Recorded from Elland, Sutton (V.C. 63), Bolton Woods, Harewood.
- H. broomeanus* Tul. On *Fomes annosus*. Hubberholme, September, 1936 !

APIOCREA Sydow

- Apiocrea chrysosperma* (Tul.) Syd. Common on *Boletus*, *Paxillus*, etc., in the conidial and chlamydospore stages (*Sepedonium chrysospermum* Bull.). The perithecial stage has not been found in Yorkshire.

CALONECTRIA de Notaris

- Calonectria ochraceo-pallida* (B. and Br.) Sacc. ; synonym *Nectria plowrightiana* (Sacc.). On dead stems of *Arctium lappa*, Mulgrave Woods, September, 1912, Herb. Brit. Mus. !

GIBBERELLA Saccardo

- Gibberella pulicaris* (Fr.) Sacc. Common, on elder, etc.
- G. cyanogena* (Desm.) Sacc. On decaying cabbage stalks, etc. Salter-hebble (Crossland), Herb. Kew !

TRICHONECTRIA Kirchstein

Trichonectria hirta (Blox.) Petch; synonym *Nectria hirta* Blox., *Lasionectria hirta* (Blox.) Masee, *Calonectria vermisporea* Masee and Crossl., *Dialonectria vermisporea* Masee and Crossl. On dead wood. Hardcastle, Hebden Bridge (Crossland), Herb. Kew!

TORRUBIELLA Boudier

Torrubiella aranicida Boud. On spiders. Hubberholme, September, 1936!

POLYSTIGMA De Candolle

Polystigma rubrum (Pers.) DC. On leaves of *Prunus spinosa* and *P. insititia*. Scarborough. Also recorded from Thirsk on *P. spinosa* and *P. domestica*.

HYPOCREOPSIS Karsten

Hypocreopsis lichenoides (Tode) Seaver; synonym *Hypocrea riccioidea* (Bolt.) Berk. Found by Bolton on dead branches of willow and hazel, Ramsden Wood, Halifax, February, 1790, the only Yorkshire record. The locality 'Corby' for this species is Corby Castle, Carlisle, not Corby, Lincolnshire.

HYPOCREA Fries

Hypocrea pulvinata Fekl. On *Polyporus betulinus*. Helmsley, September, 1935! Askham Bog, May, 1936 (W. G. Bramley)! Allerthorpe Common, August, 1936! Buckden, September, 1936!
H. schweinitzii Fr. On dead wood. Stainton Low Wood, near Reeth, October, 1936 (W. G. Bramley)!
H. rufa (Pers.) Fr. On dead wood and fungi. Generally distributed.

CHROMOCREA Seaver

Chromocrea gelatinosa (Tode) Seaver; synonym *Hypocrea gelatinosa* (Tode) Fr. On dead wood. Mulgrave Woods, September, 1910 (T. Gibbs), Herb. Brit. Mus.! September, 1930 (British Mycol. Soc.), Herb. Kew! Selby, 1916 (Cheesman), Herb. Kew! Staynor Wood, Selby, September, 1918 (Cheesman), Herb. Kew! Also recorded from Harewood.

EPICHLÖE Fries

Epichloë typhina (Pers.) Tul. On living stems of grasses. Common. Hedon, August, 1935!

CORDYCEPS Link

Cordyceps ophioglossoides (Ehrh.) Link. Parasitic on *Elaphomyces*. Burnsall, September, 1931! Recorded from Thirsk, Raincliff Wood, Mulgrave Woods, Blackwood near Selby.
C. capitata (Holms.) Link; synonym *Sphaeria agariciformia* Bolt. Parasitic on *Elaphomyces*. Ramsden Wood, Halifax, 1788 (Bolton).
C. militaris (Linn.) Link. On pupæ and larvæ of Lepidoptera. Generally distributed.
C. gracilis Mont. and Dur. On larvæ of Lepidoptera, especially *Hepialus*. Higher Greenwood, Hebden Bridge, May, 1893, Herb. Kew! Masham, April, 1902, Herb. Kew! Holmpton, April, 1935 (L. M. Anderson)! Richmond, 1937 (J. B. Nicholson)!
C. Forquignonii Quélet. On flies. Higher Greenwood, Hebden Bridge, May, 1893, Herb. Kew! Masham, April, 1902, Herb. Kew! Grassington, September, 1931!

CLAVICEPS Tulasne

Claviceps purpurea (Fr.) Tul.; synonym *C. microcephala* Tul. In the inflorescences of grasses. Common.

C. nigricans Tul. On *Heleocharis*. Recorded in the *Catalogue of Yorkshire Fungi* for V.C. 63 and 65.

DISCARDED NAMES AND RECORDS

Melanospora gigantea Massee and Crossl. *Nomen nudum*. No description published and no specimen available.

Sphaeroderma giganteum Massee and Crossl. = *Melanospora gigantea* Massee and Crossl.

Nectria ditissima Tul. = *N. punicea* (K. and S.) Fr.

N. ribis (Tode). The specimens recorded under this name from Scarborough (Massee) now in Herb. Brit. Mus. are *N. cinnabarina* !

N. cucurbitula Sacc. Occurs on conifers only. Recorded from Scarborough and Bulmer, on dead branches, but no specimens available. A specimen, Mulgrave Woods, Y.N.U. Fungus Foray, 1908, in Herb. Kew is *N. cinnabarina* !

N. ralfsii B. and Br. Recorded in *The Naturalist*, September, 1881, from Goole Moor, but no specimens are available, and the species is known only from Cornwall, Devon, and Hampshire.

N. subquaternata B. and Br. A specimen in Herb. Brit. Mus. under this name, from Mulgrave Woods, July, 1910, is *Dialonectria peziza* (Tode) Cke. !

N. plowrightiana (Sacc.) = *Calonectria ochraceo-pallida* (B. and Br.) Sacc.

Sphaerostilbe gracilipes Tul. The specimen from Hebden Bridge, recorded in *Fungus Flora of Yorkshire*, now in Herb. Kew, is *Stilbella pellucida* (Schrad.) on *Tubercularia* sp. !

Dialonectria aurea Sacc. Recorded in *Fungus Flora of Yorkshire* from Mulgrave Woods and Masham. The name is a synonym of *D. peziza*, and the specimens, now in Herb. Kew, are that species !

D. vermispora Massee and Crossl. = *Trichonectria hirta* (Blox.) Petch.

Lasionectria funicola Berk. = *Nectriella funicola* (B. and Br.) Petch.

L. hirta (Blox.) = *Trichonectria hirta* (Blox.) Petch.

L. rousseliana (Mont.) = *Pseudonectria rousseliana* (Mont.) Seaver.

Byssonectria bryophila (Rob.) is a synonym of *Hyphonectria muscivora* (B. and Br.) Petch, but the specimen recorded under the former name from Hebden Bridge was undoubtedly, from Crossland's drawings, *Dialonectria peziza* (Tode) Cooke.

Hypomyces terrestris Plowr. and Boud. = *H. ochraceus* (Pers.) Tul.

H. lateritius (Fr.) Tul. = *Byssonectria lateritia* (Fr.) Petch.

H. terminosus (Mont.) Tul. = *Byssonectria lateritia* (Fr.) Petch.

H. chrysospermus Tul. = *Apiocrea chrysosperma* (Tul.) Syd.

Calonectria vermispora Massee and Crossl. = *Trichonectria hirta* (Blox.) Petch.

C. Leightonii (Berk.) Sacc. is a lichen !

Paranectria affinis (Grev.) Sacc. Parasitic on the lichen, *Ephebe lanata* Waino. Recorded from Sutton, near Doncaster, as *Dialonectria affinis* Sacc., but no specimens are available and the record is improbable. Mr. W. E. L. Wattam informs me that the lichen has not been recorded for Yorkshire.

Selinia pulchra (Wint.) Sacc. On cow and sheep dung. Recorded in *Fungus Flora of Yorkshire* from Terrington, ex *Grevillea* XV, 4, but the Terrington of that record is Terrington St. Clements, Norfolk.

Hypocrea gelatinosa (Tode) = *Chromocrea gelatinosa* (Tode) Seaver.

H. riccioidea (Bolt.) Berk. = *Hypocreopsis lichenoides* (Tode) Seaver.

H. pulchra (Wint.) = *Selinia pulchra* (Wint.) Sacc.

H. farinosa B. and Br. Recorded for Scarborough (Massee), but no specimens are available ; and as other determinations as this species by Massee about the same date are incorrect, the record is doubtful.

H. strobilina Phill. and Plowr. An unknown species, of which no specimens are available. Recorded on fir cones originally.

Cordyceps entomorrhiza (Dicks.) Link. Yorkshire records under this name are erroneous.

YORKSHIRE NATURALISTS' UNION : FUNGUS FORAY AT POCKLINGTON

JOHN GRAINGER, WILLIS G. BRAMLEY AND GEORGE F. SHEARD

THE Mycological Committee of the Union held its annual meeting at Pocklington, from Saturday, September 4th, to Wednesday, September 8th. Millington Woods, Allerthorpe Common, and Buttercrambe Moor Wood provided very good and interesting collections, in which the smaller species predominated.

The business meeting was held at the Feathers Hotel, Pocklington, on Saturday, September 4th, with Mr. R. C. Fowler Jones in the Chair. Mr. W. G. Bramley was elected Chairman of the Committee for the ensuing year. The other officers were all re-elected, with the addition of Messrs. A. Broadbent and H. Britten as members of the Committee. Mr. Fowler Jones then delivered his address on 'Some Reminiscences of Yorkshire Fungus Forays.' These were in essence a brief but interesting account of the history of the Committee, commencing from the time when no separate foray was held. Many intimate details of previous organisations were given, and mention of the names of Massee, Cooke and Crossland, shows that this Committee of the Union has played no small part in the development of British Mycology. The Committee also appreciates Mr. Jones's kindness in publishing *A Catalogue of Yorkshire Fungi*.

Mr. W. G. Bramley spoke upon 'Rusts.' He described the life-history of a typical rust fungus, and further discussed the special features of obligate parasitism, the various spore forms and the alternation of generations. Much of Mr. Bramley's extensive work on the distribution of *Puccinia graminis* in the absence of its alternative host, the Barberry, was also portrayed.

Mr. T. Petch, in a paper on 'Hypoxylon and Related Genera,' gave a synopsis of the work of Miller on the classification of this section of the Pyrenomycetes. This classification was based on the shape of the perithecial mouth, this being flat, papillate, or umbilicate. Mr. Petch hopes to publish a fuller and more critical account of this subject shortly in the *Naturalist*.

A Public Exhibition of a representative selection of the Fungi collected was held at the Feathers Hotel on Monday, September 6th. There was a good attendance of local residents, and a number of school-children were particularly interested.

References are made in the following list to the localities by initials.

M. = Millington Woods.

A limestone valley without river. Soil in the bottom was usually pH 8.0, and was moist. It was drier up the slopes, and of pH 6.0 to 7.0. The north side was extremely dry, and was almost completely devoid of fungi. Sycamore, elm and elder were the dominant trees, with occasional beech. An undergrowth of Burdock, Dog's Mercury and Nettle was very thick in the bottom of the valley.

A. = Allerthorpe Common.

A flat bed of peat over limestone. Species were collected only from the peat or leaf-mould, pH 5.0 to 5.5. The district is swampy in wet weather, but was dry at the time of our visit. The oak was the dominant tree, and bracken undergrowth was typical of the non-swampy ground.

B. = Buttercrambe Moor Wood, Stamford Bridge.

A bed of peat and leaf-mould over boulder clay. Leaf mould was pH 5.0 to 5.5, sandy soil at the surface, pH 6.5 to 7.0, boulder

clay pH 7.5 to 8.0. Oak was the dominant tree, and *Lastræa dilatata* provided the main undergrowth.

P. = Neighbourhood of Pocklington Town, roadsides, etc.

* New to Yorkshire. † New to V.C. 61, S.E. ‡ New to England.

MYXOMYCETES

<i>Ceratiomyxa fruticulosa</i> Macbr.	A.	<i>Stemonitis splendens</i> Rost.	A.
<i>Physarum nutans</i> Pers.	M., B.	<i>Comatricha nigra</i> Schroet.	M.
<i>Fuligo septica</i> Gmelin.	B.	<i>Arcyria denudata</i> Wettstein.	M., A.

PHYCOMYCETES

<i>Cystopus candidus</i> (Pers.) D.B. on <i>Brassica</i> sp.		<i>Entomophthora sphærosperma</i> Fres. on ichneumon.	M.
<i>Peronospora</i> sp., on <i>Senecio erucifolius</i> .	A.	† <i>E. occidentalis</i> Thaxt. on aphids.	M.
<i>Empusa Muscæ</i> Cohn on flies.	A.		
<i>Entomophthora echinosporea</i> Thaxt. on flies.	B., M.	† <i>E. Aphrophoræ</i> Rostrup on Frog-hopper.	M.

ASCOMYCETES

<i>Ctenomyces serratus</i> Eidam on feathers.	A.	* <i>Sphærostilbe flavo-viridis</i> Fckl. with <i>Melanomma pulvis-pyrius</i> .	A.
<i>Erysiphe Polygoni</i> DC. on <i>Polygonum aviculare</i> and <i>Heracleum</i> .	A.	<i>Hypocrea pulvinata</i> Fckl. on <i>Polygonus betulinus</i> .	A.
<i>Lachnea scutellata</i> (Linn.) Gillet.	B.	<i>Chætomium elatum</i> Kunze.	A.
<i>Chlorosplenium æruginosum</i> (Oeder) de Not.	M., B.	<i>Melanomma pulvis-pyrius</i> (Pers.) Fckl.	M., A.
<i>Hyaloscypha hyalina</i> (Pers.) Boud.	A.	<i>Diatrype stigma</i> (Hoffm.) de Not.	M.
<i>Rhytisma Acerinum</i> (Pers.) Fr.	M., B.	<i>D. disciformis</i> (Hoffm.) de Not.	M.
<i>Nectria cinnabarina</i> (Tode) Fr.	M., A., B.	<i>Diatrypella quercina</i> (Pers.) Nits.	A.
<i>N. punicea</i> (Kunze et Schm.) Fr. on beech.	M.	† <i>D. verruciformis</i> (Ehrenb.) Nits. (= <i>D. favacea</i> (Fr.) Ces. et de Not.) on birch.	M.
<i>N. sinopica</i> Fr. on ivy.	M.	<i>Daldinia concentrica</i> (Bolt.) Ces. et de Not.	M., A.
<i>Dialonectria sanguinea</i> (Bolt.) Cke.	M.	<i>Hypoxylon fuscum</i> (Pers.) Fr.	B.
		† <i>H. multifforme</i> Fr.	B.
		<i>Xylaria Hypoxylon</i> (Linn.) Fr.	M.

BASIDIOMYCETES

USTILAGINALES

† <i>Ustilago Utriculosa</i> Tul.	A.	<i>Urocystis Anemones</i> (Pers.) Wint. on <i>Ranunculus repens</i> .	A., M.
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UREDINALES

† <i>Pucciniastrum pustulatum</i> Diet.	A.	<i>Uromyces Geranii</i> Otth. et Wart.	M.
<i>Melampsoridium betulinum</i> (Pers.) Kleb.	A., B.	<i>U. rumicis</i> (Schum.) Wint.	A.
<i>Coleosporium Sonchi</i> Lév.	A.	* <i>Puccinia Cnici-oleracei</i> Pers.	A.
		<i>P. obtogens</i> Tul.	A.

UREDINALES—continued

- Puccinia variabilis* Grev. A. *Puccinia Lolii* Niels. M., A. On
oats.
P. Sonchi Rob. M. †*P. Bromina* Erikss. P.
P. Menthæ Pers. B. †*P. Triticina* Erikss. P., M.
P. Caricis (Schum.) Reb. A. †*P. simplex* Er. et Henn. P., M.
P. graminis Pers. M., A. On oats and wheat. †*P. Arrhenatheri* Erikss. P., M.

AGARICALES

- Amanita phalloides* (Vaill.) Fr. *Hygrophorus conicus* (Scop.) Fr.
A., B. B.
A. muscaria (L.) Fr. A. *Laccaria laccata* (Scop.) B. et Br.
A. rubescens (Pers.) Fr. A., B. A., B. var. *amethystina* (Vaill.)
Amanitopsis vaginata (Bull.) B. et Br. B.
Roze. B. *Pluteus cervinus* (Schæff.) Fr.
A. fulva (Schæff.) W. G. Sm. M., A., B.
A., B. *Entoloma prunuloides* Fr. B.
Lepiota cristata (A. et S.) Fr. *E. jubatum* Fr. B.
M., B. *Pholiota aurea* (Mattusch) Fr. B.
Tricholoma rutilans (Schæff.) Fr. †*P. aurivella* (Batsch) Fr. A.
M. *P. squarrosa* (Müll.) Fr. B.
Russula nigricans (Bull.) Fr. A., B. *Inocybe rimosa* (Bull.) Fr. B.
R. adusta (Pers.) Fr. A. *Naucoria badipes* Fr. M.
†*R. lactea* (Pers.) Fr. A. *N. sobria* Fr. M., A.
R. cyanoxantha (Schæff.) Fr. A., B. †*Galera hypnorum* (Schrank) Fr.
B. A. var. *sphagnorum* (Pers.)
R. ochroleuca (Pers.) Fr. A., B. Fr. B.
R. fragilis (Pers.) Fr. A. *Stropharia semiglobata* (Kalchbr.)
R. emetica (Schæff.) Fr. B. Fr. A.
R. atropurpurea (Krombh.) Maire. *Hypholoma fasciculare* (Huds.) Fr.
A. M., A., B.
R. lutea (Huds.) Fr. A. *Panaeolus campanulatus* (Linn.)
Mycena galericulata (Scop.) Fr. Fr. A.
M., A. †*Psathyra elata* Mass. A.
M. ammoniaca Fr. M. *P. spadiceo-grisea* (Schæff.) Fr. B.
M. hematopus (Pers.) Fr. A., B. †*Coprinus extinctorius* (Bull.) Fr.
M. galopus (Pers.) Fr. M., B. A.
Collybia platyphylla (Pers.) Fr. *C. micaceus* (Bull.) Fr. M.
B. *C. plicatilis* (Curt.) Fr. M.
Androsaceus rotula (Scop.) Pat. *Paxillus involutus* (Batsch) Fr.
B. A., B.
A. androsaceus (Linn.) Pat. M. *Boletus luteus* (Linn.) Fr. A.
Lactarius turpis (Weinm.) Fr. *B. badius* Fr. A.B.
A., B. *B. variegatus* (Swartz) Fr. A.
L. pyrogalus (Bull.) Fr. A. *B. chrysenteron* (Bull.) Fr. A.
L. piperatus (Scop.) Fr. A., B. *B. edulis* (Bull.) Fr. B.
L. quietus Fr. B. *B. luridus* (Schæff.) Fr. B.
L. rufus (Scop.) Fr. A. *B. scaber* (Bull.) Fr. A., B.
L. subdulcis (Pers.) Fr. A., B.
L. subumbonatus Lindgr. A., B.

APHYLLOPHORALES

- Polyporus perennis* (Linn.) Fr. A. *Dædalia quercina* (Linn.) Fr. A.
P. squamosus (Huds.) Fr. A. †*Radulum quercinum* Fr. A.
P. betulinus (Bull.) Fr. M.A.B. *Stereum hirsutum* (Willd.) Fr. B.
Fomes annosus Fr. M. †*Corticium arachnoideum* Berk. M.
Irpex obliquus (Schrad.) Fr. *Clavaria cristata* (Holmsk.) Fr. B.
M., A., B. *C. cinerea* (Bull.) Fr. B.

CALOCERALES

Dacryomyces deliquescens (Bull.) †*Calocera stricta* Fr. A.
Duby. M.

GASTEROMYCETALES

Cynophallus caninus (Huds.) Fr. *Phallus impudicus* (Linn.) Pers.
M. A.B.
Scleroderma aurantium Pers. A.

FUNGI IMPERFECTI

Oidium alphetoides Griff. et Maubl. †*Blastotrichum puccinioides* Preuss.
A. A. On *Russula*.
**Cephalosporium dipterigenum* *Cladosporium herbarum* (Pers.)
Petch. M. On spider. Link. A.
†*Rhinotrichum repens* Preuss. B. †*Stilbella erythrocephala* (Ditm.)
†*Sepedonium chrysospermum* (Bull.) Lind. A. On Rabbit dung.
Fr. A. *S. fimetaria* (Pers.) Lind. A.
†*Ovularia Bistortæ* (Fckl.) Sacc. * *Isaria farinosa* (Holms.) Fr.
A. M., A., B.
Beauveria Bassiana Berk. M. On
fly. **Graphium Ulmi* Schr. M.
†*Trichothecium obovatum* (Berk.) *Aegerita candida* Pers. B.
Sacc. M. †*Epicoccum vulgare* Corda. A.

We desire to express our sincere thanks to Mr. T. Petch for naming many of the species included in this list.

YORKSHIRE NATURALISTS' UNION : ANNUAL MEETING OF THE BOTANICAL SECTION OCTOBER 9th, 1937

By kind invitation of Professor Priestley this meeting was held in the Botanical Department at Leeds University. In the afternoon the nomination of officers and members of the various committees for election at the meeting of the General Committee was first dealt with and the members present were very sorry to have to accept Mr. W. H. Burrell's definite refusal of the Chairmanship of the Bryological Committee owing to his inability to attend the field meetings. Mr. A. Thompson, of Sheffield, the Secretary of the British Bryological Society, was nominated for the office. The reports of the sections were presented by the Conveners and an interesting discussion ensued on the flowering and fruiting of plants this year. It was generally agreed that in this respect the year had been a normal one. Perhaps one feature might be cited as showing a variation from normal; that is the fruiting of the sycamore, which all observers were agreed was poor. This is a tree which has always been recorded either as good or abundant in our records of yearly fruitings.

A curious contrast in allied species was noticed in the plentiful supply of fruit on the wild apple, whereas the crop of orchard apples is generally poor, though Mr. Wattam found this reversed in the Huddersfield area; in the case of the plum species the wild sloes are scarce and the cultivated crop good. After a welcome cup of tea provided by our hostess, Mrs. Priestley, assisted by Miss Scott, we saw some well mounted and interesting alpine plants collected by Dr. Sledge from Engelberg and Pontresina, Switzerland, and Miss Scott had a series of peristomes of the different moss groups, also separate teeth of the same displayed under microscopes, and a diagram and dissections showing the forms of the male, female and sterile plants of *Mnium hornum* L. The male flower is obvious and well

known, but the archegonia are usually only found by searching over a good deal of material, and here Miss Scott showed how the female stems could be easily recognised. Miss L. M. Anderson showed a recently gathered specimen of *Lycopodium annotinum* from Buttercrambe Woods, a welcome confirmation of its occurrence in this habitat.

A paper sent by Mr. R. J. Flintoff dealing with secondary growth proved very interesting and brought out rather varied views of the members whose reports deal with this matter. Mr. Flintoff wished to put the matter into a more scientific form and, if possible, get definite figures of the relation between the length of the primary growth and that of the secondary growth. In this way we should get something more definite than mere statements of poor, normal or plentiful, which it was evident from the discussion did not mean exactly the same things to the various observers. It is evident that a secondary growth is always observed, but one only recorded that which was considered unusual. The value of our annual records is not seriously affected, for the same individual may be assumed always to report on the same area and in the way which he or she has adopted in the past. Mr. Flintoff found a good deal of difficulty in making measurements in a satisfactory manner, but the average figures he produced showed that where the normal growth has been interfered with as in the case of beech hedge that is clipped, the secondary growth that ensues may be two and a half times as long as the primary growth, whereas on the portion of an oak showing secondary growth this is only slightly longer than the primary growth.

In the discussion which followed, reference was made to papers on the subject that have appeared in the *Naturalist*; these are:

- 'Secondary Foliage on Yorkshire Trees,' Prof. J. H. Priestley, *Naturalist*, 1928, p. 19.
- 'Precociously-expanding Buds and their relation to the problem of Bud Scale Morphology,' A. S. Foster, Sc.D., *Naturalist*, 1928, p. 71.
- 'Secondary Elongation Growth on Oaks, 1929,' W. Wight, B.Sc., *Naturalist*, 1930, p. 65.
- 'The Bud Scale,' D. Underwood and L. I. Scott, *Naturalist*, 1935, p. 217.

In these papers will be found answers to many of the questions which were asked during the discussion.

The report of the Bryological Section mentioned the publication of a paper on 'The Distribution of Mosses in Relation to Soil Acidity' in the *Naturalist*. Mr. Malins Smith in discussion pointed out that this paper recorded a large proportion of very low values for soil acidity, values on the whole much lower than any ecologists had previously recorded. Dr. Pearsall stated that the method used by the author of the paper was an accurate one and much more exact than the usual colorimetric methods. His further remarks, however, admitted that a high proportion of soils of specially high acidity had been included and that probably *Dicranella heteromalla*, for instance, would show a wider range of soil acidity if a more varied set of soils growing it had been tested. Mr. Milsom's remarks tended to support this position.

The Entomologist for October contains: 'Lord Rothschild, F.R.S.' (with plate), by N. D. Riley; 'Notes on British Odonata in 1936,' by J. Cowley; 'Notes on the Lepidoptera of an Isle of Wight Wood,' by E. A. C. Stowell; 'Further Notes on *Phalonia gilvicomana* Zeller,' by S. Wakely; 'Migration Records, 1937,' by Capt. T. Dannreuther; 'On some European Yellow Forms of *Pieris napi* L. (Lep. Rhopalocera): a Review of the Literature,' by G. D. Hale Carpenter and B. M. Hobby; and numerous notes and observations.

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 240)

LEGUMINOSÆ—continued

Lathyrus palustris L.

Not in North Riding Flora. Near Bawtry, 1910, H.H.C. spns ! the exact locality just within the boundary of Notts.

L. sylvestris L.

Probably always introduced.

L. pratensis L.

L. Ochrus L. (*Ochrus pallida* Pers.).

Cornfield one mile west of Tadcaster, J.F.P., 1902! a 'Yellow Vetchling' reported as '*Aphaca*' from this district, 1879, Mr. Blaydes-Thompson, a Colonist as testified by these dates. Alien, Leetham's flour mills, Heslington, York. H. Stansfield!

L. Nissolia L.

Doncaster, Sandal Brickfields ! H. H. Corbett. *Nat.*, 1897, p. 226.

L. angulatus L., *sphaericus* Retz., *annuus* L., *inconspicuus* L., *Cicera* L., and *setifolius* L. are aliens that have occurred.

L. montanus Bernh. (*Orobis*).

Pisum arvense L. Alien.

ROSACEÆ

Prunus Lauro-Cerasus L., *lusitanicus* Will., *serotina* Ehrh., *Mahaleb* L., *semperflorens* Ehrh. are all naturalised aliens.

Prunus Padus L.

Some further localities are : Newton-in-Bowland, J.F.P. Howstean ! Scotton Banks ! Birk Crag ! Wharnccliffe Woods, T.G. *Nat.*, 1895.

P. avium L. Denizen.

P. Cerasus L. Denizen.

P. domestica L. Alien.

P. spinosa L.

P. insititia L.

Amygdalus communis L. Planted.

Spiræa salicifolia L.

Denizen. Market Weighton Road, Selby. J. Kendall, 1924. Thorne waste, Y.N.U. meeting in 1907.

Spiræa opulifolia L. (*Physocarpus* Max.), *S. chamædryfolia* L., *S. hypericifolia* L., and *S. tomentosa* L. have been introduced.

Spiræa Ulmaria L.

Our Yorkshire plant is the var. *nivea* Wallr., where *S. denudata* Boenn. is regarded as the type. The latter seen at Revolution Well, Meanwood and Knox Mill, Harrogate, 1892 !

S. Filipendula L.

Some further records are : Eshton, Miss Tranter, *Nat.*, 1889. Grass woods ! Thorne Common, sp. so localised in Hb. G. P. Nicholson.

Rubus idæus L.

var. *obtusifolius* Willd. (*Leesii* Bab.), Brandon Lane towards Mount Pleasant, Scarcroft, to east of the stony track leading to Wike ! A. E. Bradley.

[‘ Yes, *obtusifolius* (Willd.), first record for Yorkshire.’ (W. M. Rogers, August, 1909.)]

WEST YORKSHIRE BRAMBLES

A. E. BRADLEY

[Editorial Note.—The reader’s attention is called to the fact that for the Genus *Rubus* only the West Riding is covered by the following detailed survey prepared by Mr. A. E. Bradley. It is hoped to publish a revised account for the two other Ridings at some future date.]

The following list was compiled in 1911, and was intended to be a revision of the account of the brambles in F. A. Lees’ *Flora of West Yorkshire* (1888).

Owing partly to the progress of knowledge as to the limits and relationships of the species, and partly to great changes which had been made in nomenclature, it was agreed that a mere supplement would be unsatisfactory, and that a completely new list should be drawn up, founded upon recently verified specimens.

The late W. Moyle Rogers, author of the *Handbook of British Rubi* (1900), with great kindness, gave constant help and supervision to the task, and examined all the material to which the following localities refer, except in cases where the gatherings were *very clearly* identical with others for which he had already vouched. (The very few exceptions to this will be understood from the context.)

In the past, many *Rubus* names, originated by continental authors, such as *affinis*, *carpinifolius*, *villicaulis*, *fusco-ater*, and *infestus*, were misapplied by British botanists and became current in an incorrect sense. These five names are still used, but for *quite different plants* from those to which they refer in the *Flora*.

Dr. Druce, in his *British Plant List*, Second Edition, 1928, used the following for certain names which appear in our local list:—for *suberectus*, *nessensis* W. Hall ; for *pulcherrimus*,

polyanthemus Lindb.; for *Godronii*, *Winteri* Focke; for *rusticanus*, *ulmifolius* Schott.; for *leucostachys*, *vestitus* W. and N.; for *mucronatus*, *mucronifer* Sudre; for *anglosaxonicus*, *apiculatus* W. and N.; for *setulosus*, *angusticuspis* Sudre; for *podophyllus*, *fuscicortex* Sudre (= *podophyllus* Rogers non P.J.M.); for *infecundus*, *rufescens* L. and M. (as a species); and for *cyclophyllus*, *conjungens* Bab.

ORDER OF FLOWERING, as noted near Leeds, 1908—1910. —*Caesius*, early June; *Rogersii* and *fissus*, end of June and early July; *plicatus*, *sublustris*, and some other *Caesii*, about July 10th; *mucronatus* about July 18th. Most other West Riding brambles, end of July to early August, *incurvatus*, *pulcherrimus*, and *Lindebergii* before *dasyphyllus* and *podophyllus*. *Echinatus* about mid-August, but unlike *rusticanus* (also v. late flowering), not blooming on into late autumn or winter.

Genus: *Rubus* Linn.

Sub-genus: *Eubatus*, Focke.

GROUP I.—*Suberecti*

Rubus fissus Lindl. V.C. 63, 64. In similar situations to *plicatus* but in more exposed places; often among bracken. Locally plentiful. Readily known by its *subulate* scattered prickles and plicate overlapping leaflets, often seven to the leaf, in conjunction with the sepals characteristic of the group.

M. Denshaw Clough, 1876, Herb. Lees.

N. Scotton Banks, Knaresborough; Birk Crag, Harrogate, 1893, Herb. Lees.

W. Askham Bog, G. Webster. Between Ilkley and Bolton Abbey, 1910, A. E. B.

A. Adel Valley, Leeds, between the Crag and the stream, abundant, and elsewhere in the vicinity, 1910, A.E.B.; Bell Horse Lane, Cullingworth (boggy thicket), 1887, Herb. Lees.

C. Bell Bottom Wood, near Mytholmroyd, 1906; Spring Wood, 1909, W. B. Crump.

D. Hatfield Chase, E. F. Linton; Holmesfield, near Sheffield, Thos. Gibbs. (The Flora gives localities in R. and T. districts also.)

[*R. suberectus* Anderson. V.C. ?63, ?64. It cannot be definitely asserted yet that the true segregate is a West Riding species. Most of the former records have been investigated, and prove to refer to forms of *fissus*, or of the variable *plicatus*. It is quite likely, however, that we have the plant, as it is said to occur in the North Riding. These two localities may be correctly placed here:—

Y. Dallow Gill, near Ripley, 1811, G. Anderson. This should be confirmed afresh. Anderson would probably use his specific name in an aggregate sense, covering allied species which are now considered to be distinct.

D. Wharnciffe, about 1870, Amos Carr. 'Apparently true *suberectus*,' W. M. Rogers; but the spn. in Herb. Lees is too imperfect for certain determination.]

R. Rogersii Linton. V.C. 64. This species was not distinguished until 1881, when Mr. Rogers found it in South Devon, but it has since then been observed in many counties throughout Great Britain. The leaflets are small, flat and finely-toothed, the terminal one rather elongate and gradually tapering, and there are six leaflets on a few leaves

on most of the barren stems. In flower before all our brambles except the dewberry.

- A. Heathy wayside in Brandon Lane, between Shadwell and Wike, near Leeds, 1909, A.E.B.

R. plicatus Wh. and N. V.C. 63, 64. Heaths and moors, sometimes in shade, often in sandy peaty soil near bogs and streams. Very variable. Broadly ovate leaflets, cordate at the base, usually with a short sharp point, distinguish it from the three preceding. Commonly with white flowers; pink-petalled spns. not noted.

- W. Askham Bog, Herb Lees.

- A. Adel Valley, near Leeds, plentiful, and in various places over Adel Blackmoor to Alwoodley, 1908, A.E.B. A variety with long stamens, sharply compound leaf-toothing, and numerous scattered slender prickles, grows on peaty soil by a plantation near Alwoodley Lane.

- C. Spring Wood, near Mytholmroyd, 1906, W. B. Crump. Identical with the common Adel form, above. Hebden Bridge, Todmorden, S. Gibson.

- T. 'New Zealand,' Thorne Moor, 1899, H. H. Corbett. With small, neat, bluntly-pointed leaflets. (Localities in L., R., Y., and N. districts are given in the *Flora*; but all former records of *Suberecti* should be confirmed.)

(GROUP II.—*Sub-Rhamnifolii*. No records.)

GROUP III.—*Rhamnifolii*.

R. carpinifolius Wh. and N. V.C. 63, 64. Not the *carpinifolius* of the *Flora*; see *pulcherrimus*, below. A pale-green bramble, with sub-patent fruiting sepals. Sometimes difficult to distinguish from forms of *Lindleianus*, but it has larger fruits.

- W. Leathley to Stainburn, 1899, G. B. Savery.

- A. Roundhay Park, 1908; about Eccup, 1909; Slaid Hill, Moortown, 1910, A.E.B.

- D. Ecclesall, near Sheffield, Thos. Gibbs.

R. incurvatus Bab. V.C. 64, 65. Locally common. Our form is not exactly the typical plant found in North Wales, but comes near to it. The petals are white and the panicle is markedly pyramidal; the leaflets are somewhat variable in outline, but most commonly roundish-ovate with acute points, and sharply lobate-dentate edges. The 'velvet' which covers the leaflets beneath is thickest when the plant grows in exposed sunny situations.

- L. Dent Valley, 1906, W. M. Rogers.

- W. Wescoe Hill, 1900, G. B. Savery; Leathley, Stainburn, North Rigton, common, 1909, A.E.B.

- A. Lane near Adel Crag, and elsewhere in the vicinity, 1906-9, A.E.B.

R. Lindleianus Lees. V.C. 63, 64, 65. Common. Dwarf bushes with small leaflets are occasionally found in exposed situations, and some extreme states might easily be confounded with *R. Bakeri* F. A. Lees. The larger, pure white flowers of *Lindleianus*, and the much longer stamens, will serve to distinguish it in these cases.

- L. Dent Valley, 1906, W. M. Rogers.

- N. About Pannal; between Nidd Hall and Brearton (type and a dwarf form), 1909, F.A.L. and A.E.B.

- W. Etchell Crag; Barwick in Elmete; Stainburn to Leathley (very fine and abundant), 1909, A.E.B.

- A. Brandon near Leeds, 1871, Herb. Lees. Common about Adel, Shadwell, and Wike, with a dwarf form in several places, 1907, A.E.B.

D. Rivelin Valley, Sheffield, 1907, A.E.B.

C. Hebden Bridge, Herb. S. Gibson. Near Dauber Bridge, Mytholmroyd, 1906, W. B. Crump. Near Almondbury, T. W. Woodhead. Norland, 1894, J. T. Aspin. (Recorded in the *Flora* for M. and T. districts also.)

[*R. rhamnifolius* Wh. and N., sp. coll. ? V.C. 63, 64. There is no satisfactory evidence of the occurrence of the type and even plants belonging to the aggregate species (other than *Bakeri* below) appear to be very rare in our area. Most of the records in the *Flora* would now be assigned to other species.

These localities are given provisionally only, pending further study of the living plants :—

A. Skipton Rock, near Draughton Side, 1876, F.A.L. 'Very near to the true *cordifolius* Weihe,' W.M.R.

C. Midge Hole Lane, Hebden Bridge, S. Gibson; and Bell Hole, Mytholmroyd, 1905, W. B. Crump. Small forms of the aggregate species, in each case.]

R. rhamnifolius, sub-species *Bakeri*, F. A. Lees. V.C. 63. Open situations, heaths, etc. A dwarf, small-leaved bramble. First described by F. A. Lees in 1887 from plants growing at Gormire near Thirsk, it has since been found to have a wide range in Britain and is now known in more than a score of the Watsonian vice-counties. The best developed panicles, though not very large, are broad and very compound above, and resemble those of *R. Selmeri*, in miniature. The relationship with the latter species is indicated in Mr. Rogers' *Handbook*, and the Mytholmroyd plants shew it strongly (as do similar specimens from Gormire and Cumberland) in the texture of the *concave* leaflets, the external clothing of the sepals, and in a certain indescribable general character.

C. Bell Hole, 1905; and Broadhead near Mytholmroyd, 1906, W. B. Crump.

—, forma *elongata* Rogers (*Journal of Botany*, 1906, p. 358). V.C. 64, 65. A strongly-marked plant, rather widely spread in north-west England and known also in Wales. It differs from the type of *R. Bakeri* especially in having large white petals, a taller, laxer and more pyramidal panicle, and usually a still longer petiole to the terminal leaflet, which is often hardly longer than its stalk.

L. Between Dent and Sedbergh, 1906, W.M.R.

R. Settle and Giggleswick, 1890, W.M.R.

W. Lanes near Almescliffe Crag, 1909, A.E.B.

A. Adel Crag, Leeds, 1908, A.E.B.

(Note.—May I suggest that *f. elongata* Rogers, though obviously a *rhamnifolius* form, may not be very closely related to *R. Bakeri* F. A. Lees, and that the latter might be better placed under *Selmeri* than under *rhamnifolius*? Herbarium spms.—with obscured floral characters and the leaflets all in one plane—make the two dwarf forms appear very much alike. My suggestion is the result of very many comparisons made with copious *living* material from Yorkshire, Cumberland, and North Wales.—A.E.B.)

R. nemoralis P. J. Muell. V.C. 65.

L. Hillside between Dent and Sedbergh, 1906, W.M.R.

R. pulcherrimus Neum. V.C. 63, 64, 65. Common. Most, if not all, of the *carpinifolius* and the *umbrosus* of the *Flora* belong to this species. It occurs with deep pink, pale pink, and white flowers, and sometimes has 7-nate leaves.

L. Dent Valley, 1906, W. M. Rogers.

Y. Studley Royal and Wicliffe Lane, Ripon, Herb. Lees.

N. Plompton, Knaresborough, H. Fisher and H. J. Wilkinson.

Pannal and Pateley Bridge, 1909, A.E.B.

W. Lane near Almescliffe Crag, 1909, A.E.B.

A. Ledstone, Micklegate, on the limestone, Herb. Lees. Frequent about Adel, Moortown, and Shadwell, near Leeds, 1908, A.E.B.

C. Shawclough, Longwood, T. W. Woodhead.

D. Rivelin Valley, Sheffield, Amos Carr. Millhouses and near Holmesfield, Thos. Gibbs.

R. Lindebergii P. J. Muell. V.C. 63, 64, 65. Locally abundant, both on sandy and limestone soils. Some, at least, of the localities given under *affinis* in the *Flora* are for plants which belong here, judging from the herbarium spms.

R. Lindebergii is a very distinct and constant species; it was one of the brambles included under the old *umbrosus* of British authors.

L. Dent, 1906, W. M. Rogers.

R. Giggleswick and Stainforth, in plenty, 1890, W.M.R.

W. Barwick-in-Elmete; North Rigton, 1909, A.E.B.

A. Adel Valley, Shadwell, and Wike, near Leeds, frequent, 1908, A.E.B.

C. Broadhead near Mytholmroyd, 1906, W. B. Crump. Yatsholme Wood, near Holmfirth, T. W. Woodhead.

GROUP IV.—*Villicaules*

R. mercicus Bagnall. V.C. 63.

C. Bell Hole near Mytholmroyd, 1905, W. B. Crump. (Mr. Crump only saw one bush and he has not been able to find it again.)

[—, var. *bracteatus* Bagnall. Recently reported for V.C. 64. The Adel plants so-named have proved to be shade-altered forms of our Yorkshire *incurvatus*, resembling *bracteatus* remarkably in the panicle.]

[*R. villicaulis* Lindeb. We do not appear to have this in West Yorks. What Bloxam and many British authors called *villicaulis* is the *pyramidalis* of Kaltenbach, but the name *villicaulis* has been applied to various brambles at one time or another. In the *Flora* it seems to refer chiefly to a form of *pulcherrimus*, to judge from the specimens remaining.]

R. Selmeri Lindeb. V.C. 63, 64. (= *R. affinis* Bloxam.) Open, sandy situations, hedge-rows, etc.; not on limestone. Very abundant locally. The *affinis* of the *Flora* included this plant and some others which were erroneously placed with it, e.g. *Lindebergii*.

Most of the petals have a regular and distinct notch, which is very noticeable when the flower has opened out into its characteristic star-like form. All the bushes examined had this character, and it was especially marked in the more luxuriant plants.

N. Scotton Banks, Knaresborough, 1900, H. Fisher.

W. Bardsey, 1909; Ulleskelf, 1910, A.E.B.

A. Meanwood, Adel, Shadwell, etc., near Leeds, abundant, 1908, A.E.B.

C. Near Holmfirth, T. W. Woodhead.

D. Medge Hall, 1902, C. H. Waddell. Kimberworth, 1906, W. M. Rogers. Near Sheffield, F. A. Lees. (Hooton and Ravenfield, abundant, A. Bloxam, under name *affinis*.)

R. laciniatus Willd. A cut-leaved garden plant, allied to the last, apparently unknown anywhere in a truly wild state. It is found naturalised in several places; see *Flora*, p. 215.

A. Near the Stairfoot Quarry at Adel, in a tangle of *R. Selmeri*, 1911. No other introduced species present. Probably, however, bird-sown.

GROUP V.—*Discolores*

R. Godronii Lecoq and Lamotte. (*R. argentatus* P. J. Muell, in *Hdbk. Brit. Rubi*.) Type not yet recorded.

— var. *robustus* P. J. Muell. V.C. 63, 64, 65.

L. Dent Valley, 1906, W. M. Rogers.

N. Abbey Field, Knaresborough, 1900, H. Fisher.

D. Doncaster district, 1901, H. H. Corbett.

— var. *foliolatus* Rogers and Ley (*Journ. Bot.*, 1906, p. 358). V.C. 64 (65). A curious small-leaved plant. The resemblance to *Godronii* is not very close, but there are strong relationships with the var. *clivicola*, which led Messrs. Rogers and Ley to place it here, whilst recognising resemblance to *Lindebergii* and the *Rhamnifolii* group.

(L. Sedbergh to Dent, 1906, W.M.R., with a slight doubt.)

A. Lanes near Meanwood Hall, in several places; and on Adel Blackmoor, near Leeds, 1908-9, A.E.B.

R. rusticanus Merc. V.C. 63, 64. Locally very abundant, chiefly on calcareous or light drift soils and always at rather low altitudes. Common throughout the Permian tract (which traverses most of the drainage areas) but very rare on millstone grit and coal measures. In its flowering season it is rendered conspicuous by the very white hard felt on the underside of the small leaflets, and by the bright pink petals. The prickles are unusually large and wide-based.

N. Pannal; Nidd Hall to Brearton, 1909, A.E.B.

W. Leathley; Tadcaster to Selby, 1910, A.E.B.

C. Woodhouse Scar, Herb. Leyland. Erringden, 1833, and Halifax, 1840, S. Gibson.

[*R. pubescens* Wh. and N. Former records cannot be repeated without confirmation.]

GROUP VI.—*Silvatici*

R. silvaticus Wh. and N. V.C. 63, 64. Woods and thickets, rare. A softly hairy bramble, hardly known as yet in North England or Scotland, but well distributed in the South and West.

A. Near Eccup, 1899, G. B. Savery.

D. Wilby, Cantley; Sandal Beat, 1899; and Wheatley Wood, Doncaster, H. H. Corbett.

[*R. Salteri* Bab. Former records cannot be repeated without confirmation, as the nomenclature is doubtful.]

R. macrophyllus Wh. and N. *sp. coll.* V.C. 65. Rare. There seems to be no recently verified record for the *typical* plant; it occurs at Richmond and Aysgarth in the North Riding.

L. Dent Valley, 1906, W. M. Rogers.

— var. *Schlechtendalii* Weihe. V.C. 64.

N. Near Goldsborough Mill, Knaresborough, 1900, H. Fisher.

— var. *amplificatus* Lees. (V.C. 63).

(D. Hooton Cliff, A. Bloxam; *Bab. Brit. Rubi*. The variety would be known to Bloxam, but there is no recent confirmation.)

R. Colemanni Blox. V.C. 64. Open waysides and hedgerows. Locally frequent. A stout handsome bramble with many powerful prickles, those on the panicle strongly hooked. Frequent in the district east and north of Leeds to beyond the Wharfe; and no doubt in other parts of the Riding also.

W. Kirkby Overblow; Scarcroft, 1907. Near Leathley, 1909, A.E.B.

A. Adel, Wike, and Shadwell, near Leeds, 1908; Between Garforth and Barwick-in-Elmete, 1909, A.E.B.

GROUP VII.—*Vestiti*

R. Sprengelii Weihe. V.C. 63, 64. Woods and coppices, occasionally in the open. Common in many places. A pretty and extremely distinct species, preferring a light sandy soil and not usually seen on limestone.

M. Greenfield Valley, J. Whitehead.

N. Harrogate, *Bab. Brit. Rubi.* Knaresborough, Herb. Lees.

W. Bolton Woods, F.A.L. Scarcroft, 1908, and Barwick-in-Elmete, 1909, A.E.B.

A. Cookridge Wood, 1870, and Calverley Wood, 1887, Herb. Lees. Frequent about Roundhay, Adel Valley, Alwoodley, etc., 1910, A.E.B.

C. Coxley and Toothill Wood, P. F. Lee. Broadhead, Mytholmroyd, 1905, W. B. Crump. Drop Clough, Slaithwaite, T. W. Woodhead.

D. Endcliffe Wood, Amos Carr. Wharncliffe and Ecclesall Woods, Thos. Gibbs.

— *Hybrid. R. Sprengelii* X —?. V.C. 64. A very luxuriant plant, with large white flowers, juicy fruits, and enormous leaflets, grows along the edge of a wood near Adel Crag, Leeds, in company with *R. Sprengelii*. It has many *Sprengelii* characters in a modified form, but it is doubtful what bramble was the other parent.

R. hypoleucus, Lefèvre and Muell. V.C. 65 (*R. micans* Gren. and Godr. *Hdbk. Brit. Rubi*).

L. Between Dent and Sedbergh, 1906, W.M.R.

R. pyramidalis Kalt. V.C. 63, 64, 65. (= *R. villicaulis* Bloxam, etc.

L. Dent Valley, 1906, W. M. Rogers.

W. Bank of the Riffa stream, near Stainburn, 1899, G. B. Savery.

C. Drop Clough, Slaithwaite, T. W. Woodhead.

R. leucostachys Schleich. V.C. 63, 64. Common but most abundant on limestone soils. We have no note of other than *white* petals for the type.

N. Pannal, 1909, A.E.B.

W. Scarcroft and Stubbing Moor, 1908; Barwick-in-Elmete, 1909; Ulleskelf, 1910, A.E.B.

A. Meanwood, Adel, Roundhay, near Leeds; Garforth and Hook Moor, 1909, A.E.B.

C. Mytholmroyd, 1905, W. B. Crump. Drop Clough, T. W. Woodhead. Hebden Bridge, S. Gibson.

D. Doncaster, 1901, C. H. Waddell. Upper Bradfield, Amos Carr. Ecclesall Wood, etc., Sheffield, Thos. Gibbs. Kimberworth, 1906, W.M.R.

T. About Kings Wood, Roche Abbey, F.A.L.

— *Hybrid, R. leucostachys* X *rusticanus*. V.C. 64.

W. Etchell Crags, Scarcroft, with both parent species present in great quantity, 1908, A.E.B. The flowers were large and striking, of a rich rose-pink, far deeper in colour than the usual pink of *rusticanus*, but in other respects this hybrid stands fairly midway between the parent brambles. The leaflets, on their under sides, shew a groundwork of very close compact, whitish felt, as in *rusticanus*, covered with the loose soft hairs of the other species. The stem is pruinose and has the stellate hairs of the one species mixed with the simple ones of the other.

— var. *macrothyrsos* Lange (under var. *gymnostachys* Genev. in *Hdbk. Brit. Rubi*). V.C. 64. Heathy waysides, etc. A beautiful pink-flowered bramble with the densely hairy stem and general character of the type, but differing in the curved or declining prickles, pointed leaflets, and the very long, more open panicle.

A. King Lane, Adel, 1908; Eccup and Wike, 1909, A.E.B.

(To be continued)

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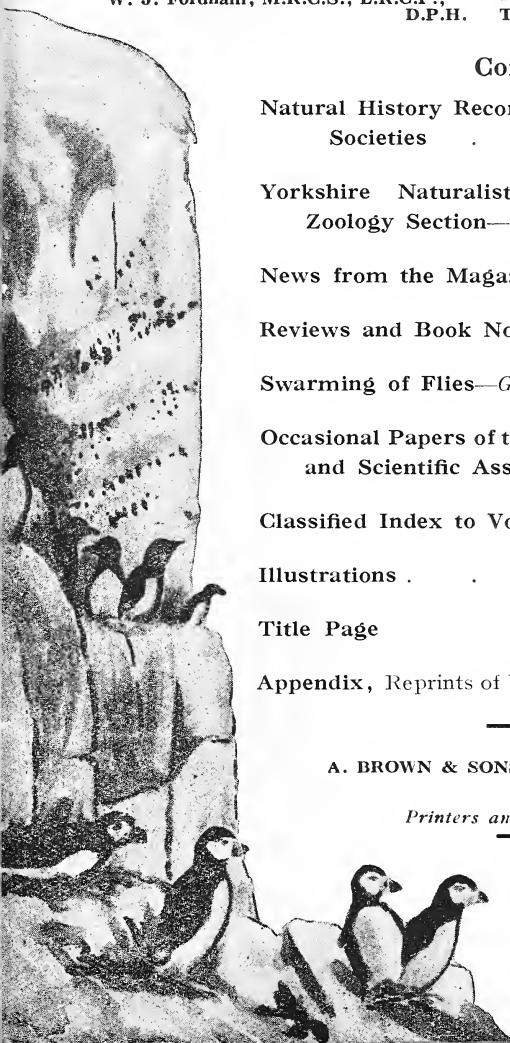
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NATURAL HISTORY RECORDS : THE WORK OF LOCAL SOCIETIES

FROM time to time the Editors of *The Naturalist* have had evidence that much useful work in Natural History goes unrecorded. A scrutiny of the Indexes of our Journal for many years past will reveal that the bulk of the articles are by a comparatively few contributors. New writers appear from time to time, but it is not often that we are asked to publish the concerted work of a group of naturalists. On the other hand, most of the local societies are very much alive and we know that an immense amount of excellent field work is being carried out. We want to give every encouragement to these societies to publish the results of their labours and we are fortunate in being in a position to make a start this month. The Leeds Naturalists' Club has for some time past felt the need of a medium for the publication of the results of the concerted efforts of its active members, and we have received from the Secretary of the Club a small collection of papers which are now published. The Club has ordered a number of reprints for distribution to its members, and so, for a comparatively small sum a local society is in a position to issue its Transactions to its members. It is hoped that many other Societies will follow suit. With regard to the type of articles suitable for publication, very large discretion will be allowed. Owing to severe limitations of space, we feel we must veto mere accounts of meetings and list of exhibits which have only a temporary news value and are out of date by the time they appear in a monthly journal.

We are hoping to get into direct touch with all local secretaries, and all enquiries will be welcomed and dealt with very promptly.

DEC 22 1937

YORKSHIRE NATURALISTS' UNION : VERTEBRATE ZOOLOGY SECTION

E. WILFRED TAYLOR

A MEETING of this Section was held in the library of the Church Institute, Leeds, on Saturday, October 16th, Mr. C. W. Mason occupying the Chair.

The Sectional Meeting was preceded by meetings of the Yorkshire Wild Birds and Eggs Protection Acts Committee and of the Yorkshire Mammals, Amphibians, Reptiles and Fishes Committee.

At the Sectional Meeting the Minutes of the previous meeting were read and approved, as also were the annual reports of the Divisional Officers of the North, East and West Ridings and of the York District. The Divisional Officers were Messrs. W. J. Clarke, C. W. Mason, H. B. Booth, and S. H. Smith.

The General and Financial Reports of the Yorkshire Wild Birds and Eggs Protection Acts Committee and of the Yorkshire Mammals, Amphibians, Reptiles and Fishes Committee were read and approved.

Mr. C. W. Mason was re-elected President of the Section for 1938.

At the evening meeting the Hon. Secretary read out a report prepared by members of the Section for the International Committee for Bird Preservation, British Section (Sub-Committee for the Investigation of the Status of the Anatidæ). This report gives the replies to thirty-one questions framed by the Committee and relates to the County of Yorkshire.

An illustrated paper was read by Mr. S. H. Smith, J.P., F.Z.S., entitled 'Some Experiments in the Culture of Roach.'

The lecturer stated that the difficulty of artificially producing roach in large quantities must be experienced to be believed. The natural fecundity of the species is very great, but the mortality among the newly-hatched fish is enormous and if one is to achieve success exceptional measures must be taken to cope with the numerous enemies which wage ceaseless warfare. Some losses were incurred through escape at the pond outlets and the whole of the remaining progeny of 150 spawning roach at the Keld Head Hatchery of the Yorkshire Fishery Board was accounted for by hordes of sticklebacks whose harmful habitation of the pond was not at first under suspicion. The ideal breeding pond must exclude everything that is harmful to the ova and young fish.

During the present year the whole of the breeding stock succumbed to disease just as they were becoming ripe. The experts of the Ministry of Agriculture and Fisheries described it as a form of dropsy accompanied by diabetes, the cause and cure of which is quite unknown. At the same time roach were taken from the Ouse at York, thirty miles away, and found to be suffering from the same disease.

In North Yorkshire roach spawn about May 15th, and the ova are distributed among tufts of willow moss by the action of the excitedly moving fish and adhere to the branches like transparent fruits. The eggs measure about one-sixteenth of an inch in diameter and a fish eight inches long was found to contain 26,500 ova. Fish five or six inches long spawn and scales of the latter shewed five annular rings. It is probable that the fish become gravid when four years old. Ova under observation became 'eyed' in six days, with a water temperature of 56° F., but when placed in a still water observation tank failed to hatch in eighteen days, though they developed immediately on being transferred to running water. Aeration is probably an important factor and the process is helped by the restless movements of the fish.

When first hatched the fry are only one-eighth of an inch long and remain dormant for three or four days. The yolk sack is absorbed in six days and feeding then commences. In two months the fry had grown to five-eighths of an inch, in four months to one and a quarter inches, and in fifteen months to two and a half inches in length. They feed readily on finely ground biscuits but refuse minced liver and offals.

Roach appear to delay spawning if disturbed and require quiet and plenty of cover. They can be artificially stripped but so far the lecturer has been unable to obtain milt to complete the artificial spawning.

At the present moment three stock ponds have been prepared each about 15 yards square. They have been planted with fresh-water algæ and isolated by sand filters and cascades against the ingress of stickle-backs and other enemies. Each pond will be stocked at the end of 1937 with 150 six to eight-inch roach in the proportion of two females to one male and the stock will be obtained from three independent sources.

Water charged with plankton will be ladled from a supply pond to feed the young fish and the adults will be fed liberally to discourage cannibalistic habits. When practicable the adult roach will be netted and removed from the stock ponds.

Mr. R. Chislett read a paper entitled, 'Notes on Teal, Marsh Warbler, and Corn Bunting,' and described a tract of country in South Yorkshire where about 40 pairs of teal are spread over an area of about eight square miles. Nesting commences towards the end of April and the scattered nests are difficult to locate. The first nest attempted yielded no photographic results as the bird, though taking no notice of the unoccupied hide, refused to return to the nest when the photographer was inside.

The second nest was among the dead bracken and leaves in a wood and little difficulty was experienced in obtaining a series of photographs. Before voluntarily leaving the nest she very carefully and deliberately pulled the down coverlet over the eggs.

On the following morning the duck sat until the lecturer was within two yards of the nest and when she left the coverlet of down was seen to be boiling with ducklings. The mother returned and brooded the young, but they soon formed a group around the sitting bird. Presently, she got up and walked a few feet, the young following and this was repeated until by easy stages she reached a grassy drive through the wood. Here she looked both ways, the young scuttled over, and she followed in the direction of the dyke.

Sixty years ago Alfred Newton refused to include the Marsh Warbler as a breeding species in the edition of Yarrell he was editing and were it not for its extraordinary song it might have been overlooked for much longer. It is a loud shrill song with numerous variations, incorporating notes from the songs of all the species round about, but without set phrases.

The construction of the nest is loose and untidy, and it is bound to the stems of osiers, docks, or other plants after the manner of the Reed Warbler. It breeds in many of the southern counties and in some districts nests in the nettles in hedge-bottoms.

The Corn Bunting is a very late nester, but from April onwards the male selects a coign of vantage and utters a jangle of notes with almost ceaseless monotony, though July is the normal nesting month. In South Yorkshire all the nests found were on the ground among growing crops and weeds, though the species is known to nest in gorse and other bushes.

The birds are thinly scattered except in one or two districts where they form colonies of as many as 30 pairs. A cock bird may have several hens and one most certainly had three wives. Periodically the cock will forsake his lookout and fly close to the nest to be joined by the hen. They then go off to feed together and after 15 minutes or so the hen returns to the nest, or both will return, and the hen will drop down to the nest which is generally near a tall mistle or other landmark.

The food brought to the nest consists of small green caterpillars, earwigs, daddy-long-legs, and moths from which the wings have been removed. The cock bird sometimes feeds the young energetically for a short time but soon tires and returns to his perch.

The paper was illustrated by a number of slides of the usual excellent quality.

Mr. W. J. Forrest exhibited a number of coloured nature photographs taken by the Dufay process. They included the nests of the Great Skua, Eider Duck, Common Gull, Red Throated Diver, Fulmer Petrel and Puffin, also some sea and landscapes of the Shetland Islands.

Finally, a vote of thanks to the lecturers and the lanternists was proposed by the President and carried unanimously.

NEWS FROM THE MAGAZINES

Sands, Clays, and Minerals: Vol. 3, No. 2. The new number of this journal is noteworthy for several authoritative articles on Colonial Mineral Resources. In view of the political importance of East Africa, Dr. C. S. Hitchen's summary of the geology and mineral resources of Kenya is especially valuable while reviews of the mineral possibilities of Uganda, Rhodesia, and Nova Scotia also merit attention. The undeveloped resources of Cornwall are discussed by J. H. Trounson, who concludes that only for tin and its associates is the future at all rosy. Other articles deal with the uses of pumice, beryllium, borax, bentonite, while coal is not neglected. Of more local interest, but less obviously related to the normal subject-matter of the journal, is a summary of the part played by the Port of Hull in British trade. In its enlarged form, this new journal continues to be useful and interesting.

The Entomologist's Record for October contains 'Some Notes on Assembling Moths, Part III,' by P. B. M. Allan; 'An Entomological Dictatorship,' by Rev. G. Wheeler; 'Early Stages of Indian Lepidoptera,' by D. G. Sevestopulo; 'Notes on Collecting, etc.'; and 'Current Notes,'; and supplements 'The British Noctuae and their Varieties,' by H. J. Turner; and 'New Lepidoptera from Iran,' by H. Bytinski Salz.

The Entomologist's Record for November contains 'Generic Names, etc., of the British Formicidae,' by H. Donisthorpe; 'Notes on Local Grasshoppers from South Benfleet,' by R. W. Attwood; 'Nomenclature Run Wild,' by Brig.-Gen. B. H. Cooke; 'Nomenclature,' by H. J. Turner; 'Notes on Collecting, etc.'; 'Current Notes'; and supplements 'The British Noctuae and their Varieties,' by H. J. Turner; and 'Variation of Some Butterflies in Anterior Asia and in Morocco,' by R. Verity.

The Entomologist for November contains '*Catocala fraxini* L. a New British Record of Capture and Breeding,' by E. A. Cockayne, C. N. Hawkins, F. H. Lees, H. B. Williams, and Sir B. Whitehouse (with coloured plate) (Lydd, Kent); 'A Week at Rannoch, May, 1937,' by C. G. M. de Worms; 'Migration Records, 1937,' by Capt. T. Dannreuther (*Macroglossa stellatarum*, Douglas, Isle of Man); 'A New Braconid from India,' by C. Morley; '*Tortrix postvittana* Walk. (Microlepidoptera), a species new to Britain,' by E. Meyrick (Newquay, Cornwall, larvae feeding on *Euonymus*); and several shorter notes and observations.

The Entomologist's Monthly Magazine for November contains 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; 'Description of a New Species of Passalidae from Borneo,' by J. R. Dibb; 'On Polymorphism in Male *Diplatys macrocephalus* (Beauv.) (Dermaptera, Pygidicranidae),' by W. D. Hincks; 'Two New Species of the genus *Meoneura* (Diptera, Carnidae),' by J. E. Collin (*M. seducta* Collin, Grassholm Island, Pembrokeshire, and *M. freta* Collin, Blakeney Point, Norfolk); 'Check List of the Cercopidae of Oceania,' by V. Lallemand; 'Synonymy of the Cerambycidae of New Zealand (Col.),' by K. G. Blair; and a few short notes.

REVIEWS AND BOOK NOTICES

The Recording of Bird Song¹

About a year ago Messrs. Witherby brought out what can quite fitly be described as an epoch-making book on **Songs of the Wild Birds**, by **E. M. Nicholson** and **Ludwig Koch**. The special innovation was the provision of two double-sided gramophone records of bird songs. Now the same authors have produced another volume called **More Songs of Wild Birds**, and with it go three records containing the songs and cries of the following species: Mistle Thrush, Stock Dove, Heron, Nightjar, Redstart, Blue Tit, Willow Tit, Chiffchaff, Wood Wren, Blackcap, Garden Warbler, Little Owl, Carrion Crow, Jackdaw, Jay, Magpie, Rook, Skylark, Curlew, Wood Lark, and Tree Pipit. This is a splendid piece of work. The accompanying book describes in much detail how the songs were obtained and, most valuable of all, detailed commentaries on all the records. These commentaries should be at hand when the records are being played. Each of the six sides of the records runs for about three minutes, and here is the first ten seconds' commentary from one of them:

Min. Sec.

- o oo The short musical warble of the Redstart is heard, followed by a Cuckoo calling.
- o o4 A Great Tit calls.
- o 09 The crow of a Cock Pheasant.
- o 10 The Redstart sings again.

It will thus be seen that the veriest beginner can really learn bird-songs in this manner, and it will be further noted that to the species actually mentioned in the original list must be added many others which come in incidentally, just as they do when one is observing in the field. The recordings vary a little in merit, but this is to be expected. Some birds are nearer the microphones than others, and again, the voice of the Wood Wren should be heard in a large empty room to reproduce adequately that quality which is associated with the singing of that species in an old beech wood. Every Field Naturalists' Society and every School should have the complete set of records and the two books. We hope the authors and publishers will feel encouraged to go on with this great work. As we said last year, we should like to hear records of the cries of the Waders, and, judging from the beautiful recording of the Lark in the air, we may even expect to hear the drumming of the Snipe.

A Catalogue of Yorkshire Fungi, by the late **F. A. Mason** completed by **John Grainger**, pp 110, A. Brown & Sons, Ltd. A fungus flora of Yorkshire was first published by Geo. Massee and Chas. Crossland in 1905, as Vol. 4 of *The Transactions of the Yorkshire Naturalists' Union*. The records were extended by Alfred Clarke until 1924, when F. A. Mason continued the work and revised and drew up the records in the form in which they are presented in this volume. The completion of the work we owe to Dr. Grainger, who has been able to add a large number of additional records from the manuscripts left by Alfred Clarke. The publication of the whole is due to the generosity of Mr. R. C. Fowler Jones. The records are arranged in tabular form to show the distribution of each species in the five Watsonian vice-counties recognised in Yorkshire. 3461 species and varieties are included and a page index of the genera. The introductory chapter contains a map showing the meeting places of the Yorkshire Naturalists' Union and a list of meeting places of the Mycological Committee of this Union. The value of this work to those studying the distribution of the fungi is obvious and we may congratulate those responsible for its production on its appearance.

¹ *More Songs of Wild Birds*, by E. M. Nicholson and Ludwig Koch, pp. viii+104, with 28 plates and 3 gramophone records. H. F. and G. Witherby, Ltd., 15/-.

Giant Fishes, Whales, and Dolphins, by J. R. Norman and F. C. Frazer, illustrated by W. P. C. Tenison, pp. 361, 8 coloured plates, 97 illustrations. Putnam, 15/- net. This book is not strictly a scientific treatise, although if its contents were detailed it would sound like one. It is a comprehensive account of the habits and distinguishing features of all the larger denizens of the ocean possessing fish-like form. It is written in non-technical language and provided with keys which enable the principal different forms to be identified. It was primarily written to assist sportsmen interested in the larger game fishes and travellers and others such as cruise passengers, to identify the creatures seen. There is no doubt that the result is an extremely interesting book and one which will be of great use to the general naturalist. It contains a remarkable amount of general biology, it is well written, and its authors' names are a guarantee that it is accurate. Not least useful and certainly one of the most interesting parts of the book are the illustrations, which reach a very high standard. This is a book which may be recommended with confidence.

Rabbit-proof Plants: Ulaws Monographs, No. 48, Instructions for Dealing with Rabbits. A list of relatively rabbit-proof plants is one of the new features in the second edition of Ulaws Monograph 48, **Instructions for Dealing with Rabbits**, which has just been published. The Monograph states that 'Hungry rabbits will attack almost any plant, especially if it has been newly introduced into a locality,' but adds a long list of herbs and shrubs which have been found to be relatively immune from attack. The Monograph gives full details for humane means of dealing with rabbits, including cyanide dusts and motor-car exhaust for fumigation, the long net or poacher's net, the dazzle light and dog, and rabbit-proof fencing. A copy will be sent free on receipt of a stamped envelope measuring six in. by nine in. by Ulaws (The University of London Animal Welfare Society), 42 Torrington Square, London, W.C.1.

Swift Movement in the Trees (and at their roots), by Phyllis Kelway, pp. x+189, with 20 photographs by the author. Longmans, 6/-. We are glad to have another book by Miss Kelway. This volume deals mainly with squirrels, but there are entertaining chapters on shrews, moorhens, and toads, and every word bears the stamp of first-hand observation. Miss Kelway has a charming style and her photography is up to the standard of her writings.

Watching Wild Life, by Phyllis Bond, pp. xii+180, with 18 photographs by the author. Longmans, 6/-. Nowadays there are many books on how to observe nature, but all first-hand workers will find something new to tell us. In this book the author writes of personal observations and gives much information to those who want to watch birds and animals at close quarters. The advice given throughout is very clear and entirely reliable and includes chapters on tracking, bird flight, and song. For those who are looking for a natural history book to give as a Christmas present to a child, or a 'grown-up,' this is one we can recommend.

Edward Wilson, Nature Lover, by George Seaver, pp. xii+221, with 17 coloured illustrations, 28 in line and 22 half-tones. John Murray, 10/6. Those who have been so fortunate as to read George Seaver's *Edward Wilson of the Antarctic*, will accord an eager welcome to this new work. The death of Dr. E. A. Wilson at the South Pole was a great loss to Natural History. He was not only a careful scientific observer but a most accomplished artist. At the time of Scott's last expedition, Wilson had already made a name for himself, as the illustrator of a work on British mammals, and he was preparing a series of paintings of British Birds, which, no doubt, would have been published had it not been for his untimely death. All naturalists, and particularly

ornithologists' will be indebted to Mr. George Seaver for this charming portrayal of Wilson as an artist-naturalist. The illustrations are selections only of Wilson's nature drawings and paintings. They are all very fine indeed and the reproduction is a credit to the publishers. We are only sorry that the question of cost makes it impossible to publish more than a small proportion of Dr. Wilson's pictures.

Edward Grey of Falloden and His Birds, by **Seton Gordon**, pp. 20; with 16 full-page plates. Edition limited to 750 copies. *Country Life*, 10/6. This charmingly produced memorial of Lord Grey has been written by the right man. Mr. Seton spent much time at Falloden, and saw his friend at home among the wild birds. His photographs give exactly the right impression of Lord Grey as we naturalists like to remember him. All who have had the privilege of visiting Falloden have vivid recollections of seeing wild birds such as shovellers, wood-duck, etc., being hand-fed by Lord Grey, who with infinite patience had trained these wild-reared birds to come right up to him and even perch on his shoulders to take food. Edward Grey set an example which we know is being followed by others, and all who are interested in the taming of birds should see this book.

Knight in Africa, by **C. W. R. Knight**, pp. 130, with 60 photographs. *Country Life*, 10/6. Captain Knight needs no introduction to our readers. His racy lectures on his adventures among birds have made him famous everywhere, and in this book he gives entertaining descriptions of his adventures among the wild animals and birds of South Africa. This book does not profess to be an exhaustive catalogue of African fauna but deals with Captain Knight's excursions for the purpose of photographing with camera and cine-camera certain well-chosen species. He has succeeded in producing a most informative account of his methods and their beautiful photographic results. One of the most interesting episodes is that of the photographing of the Martial Hawk and its young. Finally a young Martial Hawk is captured, and then tamed. This bird, 'James,' has now become quite famous for his 'hawking' exhibitions with Captain Knight, both in this country and in America.

Wild Life on Moor and Fell, by **W. R. Calvert**, pp. 230, 4 illustrations, 12/6. Hodder & Stoughton. This is an account, in story form, of the experiences of a naturalist living in the Lake District. It is evident from this book as well as his previous writings that the author is a careful observer and that he knows well, not only the Lake District, but also the intimate details of the creatures he writes about. Perhaps to the naturalist, the most attractive feature of the book is that the author does not endow his animals with human motives and emotions. His style is good and easy flowing and the form of the book is admirable. Undoubtedly this book will be read with pleasure by many and with interest by lovers of the Lake District and of wild nature. The reviewer ranges himself in both the latter classes, and so ventures to express a small discontent, that the beautiful illustrations are not quite as suggestive of the Lake country as he would have liked.

Ylla's Animals, by **Louis Roger**, 24 pictures and text, 7/6. Methuen. These pictures are photogravures with coloured backgrounds, and a sentence or two in explanation. Their quality is not only high in the naturalistic and artistic senses but also arouses the highest appreciation in the breast of our reviewer, aged eight, who strongly recommends this book as a present, suitable for any sensible person.

The Call of the Koala, by **Ambrose Pratt**, pp. 120, 22 illustrations, 6/- net. Robertson & Mullens, Ltd., 107-113 Elizabeth Street, Melbourne. The Koala, as the original of the teddy bear, and as one of the endemic Australian animals, is entitled to more sympathy than it has received in the struggles against advancing civilisation. It is now in danger of being exterminated and this timely book brings together

all that is known of the animal—and is at the same time a plea for its preservation. The koala although it looks like a bear and usually lives in trees, is really a marsupial. The peculiarities of its anatomy and its habits have been worked out and are fully described, but the greater part of the book deals with the efforts which have been made to find out why it was so difficult to maintain the animals in captivity or even in reservations. The answer is in general terms that it lives on trees (eucalypti of various species) which contain poisonous substances. A change of diet at certain seasons of the year is essential if the animals are to survive. The remarkable story of this drug addict among animals is of great interest—and the author is to be congratulated on the successful manner in which he has presented it. The book is not written in scientific language although it embodies a mass of scientific work for which full references are given. The proceeds of the sale of the book go towards further research on this interesting animal, but even apart from this, the book is one which ought to be read by every biologist.

A Book of Uncommon Prayer, by G. Scott-Moncrieff and Robert Gibbings, 39 pages and illustrative blocks. Methuen. This little book of verse deals mainly with birds and with a few animals, and it testifies to the naturalistic feeling of the first named author. The same may be said of the illustrative blocks by Robert Gibbings, and particularly of that of the Gannet which is extremely successful. While the quality of the poetry lies outside our province, it may at least be said that the verses are appropriate and conjure up memories of days in the field. It will be gathered that this is a suitable present for naturalists.

SWARMING OF FLIES

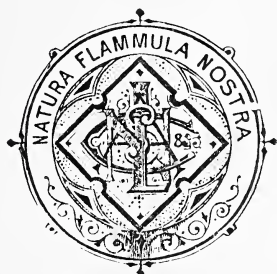
GEO. B. WALSH

ON October 21st, a neighbour called me in to see the great numbers of flies which were flying in one of the bedrooms. They were in hundreds, fluttering at the windows and flying round the room. I got a small number (12♀s, 4 ♂s) which Mr. Cheetham tells me are *Euphoria* (*Pseudopyrellia*, *Cryptolucilia*) *cornicina* F. They were killed off with a vapour spray, but fresh swarms—but decidedly smaller in number—recurred on the 23rd and 25th, after which date they came no more.

On October 23rd, in Hackness Church tower, there were enormous numbers of the Cluster Fly *Pollenia rudis* F. They had congregated in groups of a hundred or more in the entrant angles of the stone staircase up the tower where it was quite dark; in some cases there was a double layer of flies. I counted 20 such groups, and I was told that higher up the tower the swarms increased in size, and there were isolated groups on the walls so that it was impossible to put one's hand down without touching some. There must have been many thousands. They did not move in the light of a match, but buzzed about readily when disturbed. I put the mouth of a small killing-bottle on two of the groups, and caught 64 ♂s and 44♀s, but the majority escaped, *Pollenia rudis* is parasitic on earthworms of the genus *Allolobophora*, and a short account of its life-history will be found in A. D. Imms, *A General Text-book of Entomology*, First Edition, 1925, p. 650.

The Naturalist

OCCASIONAL PAPERS OF THE LEEDS NATURALISTS' CLUB AND SCIENTIFIC ASSOCIATION



(Founded in 1870)

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- No. 5.—The Coleopterous Fauna of the Adel District of Leeds. By J. R. Dibb, F.R.E.S., M.S.B.E.

elsewhere. The long years of active work on the fauna and flora of the district allotted to the Club for investigation have resulted in the accumulation of useful data in the record books of the Society, much of which has never been published. We believe that the publication of these records and kindred matters, however 'common' the species recorded may be, would be of value to students outside the district. In advancing work of this kind members are undertaking the ideal type of corporate research for a society such as ours and are realising one of the aims instituted at the Club's foundation in 1870.

The present form of publication should, we believe, encourage work of this kind by stimulating individual workers to write of their results. With these aims in view the first series of 'Occasional Papers' is offered, dealing with faunistic and other aspects of the Club's area. It is hoped that these papers may be of interest to readers of *The Naturalist*, and that they may be regarded as a contribution towards the work of the Yorkshire Naturalists' Union, to which the Leeds Club is affiliated.

The Editor and Publication Committee, on behalf of the Club, wish to thank the Editors of *The Naturalist* for permitting this medium of publication. As all the papers which follow refer to the district allotted to the Society for study, it has been thought advisable to reprint here the map which appears in the syllabus of the Society together with the following explanatory note.

BOUNDARIES

WHARFE AND NIDD AREAS AND SUB-AREAS.—These have the natural watershed lines for boundaries, except at their eastern ends where they abut on the Permian areas.

PERMIAN AREAS AND SUB-AREAS.—To include the approximate Permian outcrops, the boundaries are convenient railways, roads, and bee-lines. The area as a whole is bounded by rail from Garforth, by Kippax, Castleford, Burton-Salmon, and Sherburn, to the River Wharfe by Ulleskelf; thence bee-line to Wighill, then to Cowthorpe, bank of Nidd to Walshford Bridge, Great North Road to Arkendale, road to Ferrensby, Farnham, Scriven, and Bilton, rail by Starbeck to Bilton Court, road to Spofforth Station, footpath and by-road to Sicklinghall, bee-line to Woodhall Bridge, road to East Keswick and Bardsey, rail to Thorner Station and bee-line passing west of Saw Wood to Garforth.

PERMIAN NIDD AND PERMIAN WHARFE SUB-AREAS defined by road, Sicklinghall, Wetherby, Walton to Wighill Park.

PERMIAN WHARFE AND PERMIAN AIRE SUB-AREAS divided by road, Garforth to Hook Moor and Lotherton, thence Copley Lane to Saxton, Barkston Ash, and Church Fenton.

LEEDS DISTRICT.—NORTHERN PART is defined by rail from Newlay to Guiseley, road to near West Chevin House, thence along Otley Chevin to Bramhope, Five Lane Ends, Alwoodley Gates, Shadwell, and by Red Hall to Crossgates Station; thence rail to Killingbeck.

LEEDS DISTRICT.—SOUTHERN PART is defined entirely by railways, Killingbeck to Crossgates, Garforth, Kippax, Castleford, Methley Junction, Lofthouse Junction, Ardsley and Morley to Drighlington; thence Halifax Road to Leeds City boundary.

NO. 2—A NOTE ON THE PUBLICATIONS OF THE LEEDS NATURALISTS' CLUB AND SCIENTIFIC ASSOCIATION

JENNY V. DONNAN (LIBRARIAN)

THE first publication of the Association was the issue in 1874 of the syllabus of a course of four lectures by the late Professor Miall, and seven excursions illustrative of the geology of the West Riding. The Sixth Annual Report of the Association was printed in 1876, with the retiring President's address, and a sketch of the history of the Association since its foundation in 1870. The 1877 volume included, in addition to the annual report and the presidential address, a reprint from *The Naturalist* of an account of 'A Field Day at Aldborough and Boroughbridge,' but in the following year a short report only was issued.

Though the question of publications apparently was considered of prime importance, judging from the references in the reports, no further action was taken until 1886. In this year a volume of *Transactions* was issued containing a retrospect of the years 1878 to 1884, the papers given during the year 1885, 'A Diary of Natural History Observations and Contributions to Flora and Fauna of the West Riding.' A second volume of *Transactions* followed in 1892, this including an illustrated paper by the late Dr. Harold Wager, on 'The Structure and Life History of a Fungus.' A few copies of these volumes are available for sale at a nominal price.

The present less ambitious effort of the Association thus breaks a silence of some forty-five years.

NO. 3—TWO FLOWERING PLANTS NEW TO MID-WEST YORKSHIRE

W. A. SLEDGE, PH.D.

THE area which the Leeds Naturalists' Club has chosen for investigation has been so intensively worked by generations of field botanists that, except for micro-species in the complex genera, additional native species are rarely recorded. It was therefore as surprising as it was gratifying to find two species new both of the Club's area and to vice-county 64 in the course of an evening's excursion with Mr. G. A. Nelson, F.L.S., on July 21st, 1937.

We had gone to investigate the low-lying swampy ground bordering the Aire between Fairburn and Newton, in the extreme south-east corner of the Club's area. This district was worked over on a Yorkshire Naturalists' Union excursion in June, 1934, when a rush was noticed in immature condition near Newton, which I then recorded (*The Naturalist*, 932, p. 211, Sept., 1934) as *Juncus tenuis* Willd. The plants were in ripe fruit in July and proved to be *J. compressus* Jacq. One of the three localities given by Lees for this rare Yorkshire plant is for 'Wet pastures by Aire, below Fairburn, a few plants only, 1869.' It is improbable that this station refers to the same locality as that in which the plant was seen in abundance in 1934 and in the present year, as Newton is higher up the river than Fairburn, and so could scarcely have been intended by the words 'below Fairburn.' Associated with this species was *J. Gerardi* Lois., a plant previously unrecorded for mid-west Yorkshire. This rush is an abundant component of coastal salt marshes and ascends estuaries as high as tidal influences afford suitably saline conditions, but as a truly inland plant it is of very rare occurrence. Apart from the presence of this species it would not be surprising to find a relatively high chloride content in the soils of the Fairburn swamps, whilst it is reasonable to suppose that the plant was first brought here by one of the many species of birds which give these swamps as great an interest to the ornithologist as to the botanist. The close association of *J. Gerardi* with *J. compressus* at Newton make the conditions ideal for the occurrence of the hybrid between these species which has been recorded in a few places in Britain.

Our second discovery was *Epilobium tetragonum* L. which was found in an old limestone quarry near Ledston. For this species there are no Yorkshire records quoted in Watson's *Topographical Botany* and the two supplements to that work, or in Druce's *Comital Flora*, though Lees gives stations at Sheffield and Bawtry in the *Flora of West Yorkshire*, and a bracketed—presumably misnamed—record from Bingley.

It is difficult to believe that this widely distributed species which extends as far north as Inverness and Moray is really as uncommon in the country as the records, or lack of records, would suggest; indeed I have seen it in the East Riding during the past summer. Whilst there are no additional stations given for *E. tetragonum* in Lees' supplementary records now being published in *The Naturalist*, there are several stations given for *E. Lamyi* Schultz, an allied species not included in previous Yorkshire lists. As this is a much scarcer plant with a southern distribution reaching its northern limit, according to the *Comital Flora*, in Leicestershire, it is probable that most, if not all, the Yorkshire records for *E. Lamyi* refer to *E. tetragonum*.

NO. 4—SAWFLIES OF THE LEEDS DISTRICT

W. D. HINCKS, M.P.S., F.R.E.S.

PART I—*Tenthredinini*

SAWFLIES are one of the commonest and most striking forms of insect-life in our district, yet they have attracted surprisingly little attention. Specimens of at least a few species can be found from early spring until late autumn by using the sweeping net in meadows (for the early *Doleri*) or amongst mixed roadside herbage, especially in damp places. Beating trees, both deciduous and conifers, will yield larvæ or adults of many species. Other species may be bred from galls on Willows, and a few feed in the larvae stage on timber.

The group offers excellent opportunities for research, although there is unfortunately no up-to-date work dealing with the British species. Of the scattered literature the following may be cited as perhaps the most useful to beginners:—

F. D. Morice.—‘Help-Notes towards the Determination of British Tenthredinidæ.’ Published serially in the *Entom. Monthly Mag.*, 1903-1916.

E. Enslin.—‘Die Blatt-und Holzwespen (Tenthrediniden) Mitteleuropas, insbesondere Deutschlands.’ In Schröder, *Die Insekten Mitteleuropas*, 3, 1914, p. 97-213, 4 col. pls.

I have done no really systematic collecting of these beautiful insects, most of the specimens recorded below were obtained casually with the sweeping-net when hunting for beetles.¹ My friends, Messrs. J. R. Dibb and John Wood,

¹ This accounts for the very incomplete nature of the list of species and probably for the absence of several common forms.

have contributed by preserving the specimens which they obtained in the same way.

In the absence of an up-to-date British catalogue the classification and nomenclature used by Enslin in the book mentioned above, is adopted, and as this contribution is limited to the group *Tenthredinini* it will be advisable to quote here Enslin's arrangement of the whole super-family.

CLASSIFICATION (After Enslin).

Super-family : *Tenthredinoidea*.

Family : 1—*Tenthredinidae*.

Sub-family :—*Tenthredininae*. Group : 1—*Tenthredinini*, 2—*Dolerini*,
3—*Selandrini*, 4—*Hoplocampini*,
5—*Blennocampini*, 6—*Nematini*.

Sub-family : 2—*Lophyrinae*, 3—*Cimbicinae*, 4—*Arginae*, 5—*Pamphilinae*,
6—*Xyelinae*.

Family : 2—*Cephideae*, 3—*Siricidae*, 4—*Oryssidae*.

Abbreviations :	R.B.	Ross Butterfield.	A.H.	A. Hodgson.
	P.C.	Peter Cameron.	T.B.K.	T. B. Kitchen.
	J.R.D.	J. R. Dibb.	F.D.M.	F. D. Morice.
	E.A.F.	E. A. Fitch.	W.D.R.	W. D. Roebuck.
	G.G.	G. Grace.	W.P.W.	W. P. Weston.
	W.D.H.	W. D. Hincks.	J.W.	John Wood.

N. *The Naturalist*.

E.M.M. *Entomologists' Monthly Magazine*.

V.C.H. *Victoria County History*.

F.P. Food Plant.

The numbers before each record indicate the sub-division of the Club's area to which the locality belongs (see map).

GROUP TENTHREDININI

1. *Sciapteryx costalis* F. (F.P. : *Ranunculus acer*).
12 : Leeds, Spring of 1879, W.P.W. (det. E.A.F.) [V.C.H.].
2. *Tenthredella maculata* Geoffr. (F.P. : —).
5 : Ilkley, G.G. ; 10 : Aberford, 20/6/36, J.W. ; 12 : Adel,
5/6/22, J.R.D.
3. *T. mesomelas* L. (F.P. : Polyphagous).
5 : Ilkley, G.G. ; 6 : Thorner, 7/37, W.D.H. ; 12 : Roundhay
Park, Leeds, 27/6/31, J.R.D. ; 12 : Eschald Lane, nr. Oulton,
2/7/09, A.H. (det. F.D.M.).
4. *T. temula* Scop. (F.P. : —).
10 : Aberford, 1♀, 20/6/36, W.D.H.
5. *T. moniliata* Kl. (F.P. : *Menyanthes trifoliata*).
5 : Ilkley, 1♂, G.G.
6. *T. livida* L. (F.P. : Polyphagous).
5 : Ilkley, G.G., —6 : Blackmoor, 6/25, W.D.H. ; 1/6/33, W.H.D.
15/6/33, J.R.D. —10 : Meanwood, Leeds, 19/6/10, A.H. (det.
F.D.M.), Clayton Woods, Kirkstall, 1909, A.H. (det. F.D.M.),
Roundhay Park, Leeds, 27/6/31, W.D.H.

7. *T. ferruginea* Schrnk. (F.P. : Polyphagous).
6 : Blackmoor, 4/7/25, 1♀, W.D.H.
8. *T. balteata* Kl. (F.P. : *Pteris aquilina*).
6 : Blackmoor, 6/25, 4/7/25, W.D.H.
9. *T. colon* Kl. (F.P. : *Fuchsia, Circaea, Epilobium*).
6 : Thorner, 2♀, 9/6/24, T.B.K.
10. *Allantus arcuatus* Forst. (F.P. : *Lotus corniculatus*).
5 : Ilkley, G.G. —6 : Blackmoor, 1/6/33, J.R.D., 18/7/33, J.R.D., Thorner, 7/37, W.D.H. —8 : Pannal, common on buttercups, 12/7/67, W.D.R. (P.C. in *Trans.*, Y.N.U.) [*V.C.H.*]. —10 : Linton, 15/7/33, J.R.D. —12 : Leeds Dist., 6/8/30, J.R.D. This is the commonest species of the group in the district.
11. *Tenthredopsis*¹ *carbonaria* L. (F.P. : Polyphagous).
5 : Bolton Woods, 1♀, 6/6/36, J.W. —6 : Blackmoor, 1♀, 6/25, W.D.H., Thorner, 1♀, 7/37, W.D.H.
12. *T. nassata* L. (F.P. : Polyphagous).
5 : Bolton Woods, 6/6/36, J.W. —6 : Blackmoor, 6/36, W.D.H., 3/7/33, J.R.D., Pool, 8/6/31, J.R.D.
13. *Rhogogaster viridis* L. (F.P. : Polyphagous).
3 : Grass Woods, R.B., N., 1927 : 213, —5 : Ilkley, G.G. —6 : Harewood, 6/32, J.R.D. —10 : Aberford, 20/6/36, W.D.H. —; 12 : Roundhay Park, Leeds, 27/6/31, J.R.D. and W.D.H.
14. *R. fulvipes* Scop. (F.P. : *Galium*).
6 : Pool, 1♀, 6/6/31, J.R.D.
15. *R. aucupariae* Kl. (F.P. : —).
6 : Pool, 1♂, 6/37, W.D.H.
16. *Pachyprotasis rapae* L. (F.P. : Polyphagous).
6 : Blackmoor, 6/36, W.D.H., Thorner, 23/5/26, W.D.H.
17. *Macrophya ribis* Schrnk. (F.P. : *Sambucus* and *Ribes*).
10 : Aberford, 25/7/36, J.W.

No. 5—THE COLEOPTEROUS FAUNA OF THE ADEL DISTRICT OF LEEDS

JOHN R. DIBB, F.R.E.S., M.S.B.E.

THE Coleoptera records of the Leeds Naturalists' Club and Scientific Association were first co-ordinated and listed by W. Denison Roebuck, who searched the available literature to form a basis for his records. Most of those early records, however, emanating from such works as *Curtis Brit. Ent.*, 1831, and *Ann. Mag. Nat. Hist.*, 1830-1845, did not refer the species mentioned to an exact locality which can be traced at the present time, but only to the nearest large town or a

¹ See R. B. Benson, 'British Sawflies of the Genus *Tenthredopsis* (Hymenoptera Symphyta),' *E.M.M.*, **70**, 1934, p. 69-75. In this paper the numerous previously recognised colour forms are reduced to three species, *T. stigma* F., *carbonaria* L., and *nassata* L.

district with a name referring to a very wide area, with the result that they can only be included in a list which covers a much wider area than the small district now under survey. Most of the specimens which Roebuck recorded were submitted to E. B. Wigglesworth (see *The Naturalist*, 1890, p. 119), for confirmation or determination.

In 1915 the records were placed in the hands of E. Chas. Horrell, who contributed during the next ten years a very large proportion of the entries which now appear, and who submitted those species requiring confirmation to W. E. Sharp, Canon W. W. Fowler and E. G. Bayford.

For the ten years ending 1936 the writer has been responsible for the records and gratefully acknowledges the assistance of Messrs. H. St. J. K. Donisthorpe, J. J. Walker the late M. L. Thompson and W. D. Hincks for confirmation in certain instances.

Reference to the accompanying sketch map will indicate the limits of the district under consideration, which is bounded on the south by the Ring Road and Smithy Mills Lane, on the west by Otley Road, on the east by King Lane and Arthington Road, and on the north by King Road. The circumscribed area is approximately two and a half square miles.

GENERAL REMARKS ON DISTRICT

The Adel district is on the whole at a fairly high altitude, but varies approximately from 350 to 550 feet above sea level, the highest point being the N.E. part of Adel Moor at the corner of King Lane and Alwoodley Lane. The area includes agricultural land, open heather moor with the wooded portions restricted to more or less small parts, and the surface rocks of millstone grit. Adel Dam itself has been enclosed for many years, and here the semi-aquatic vegetation is lush in summer.

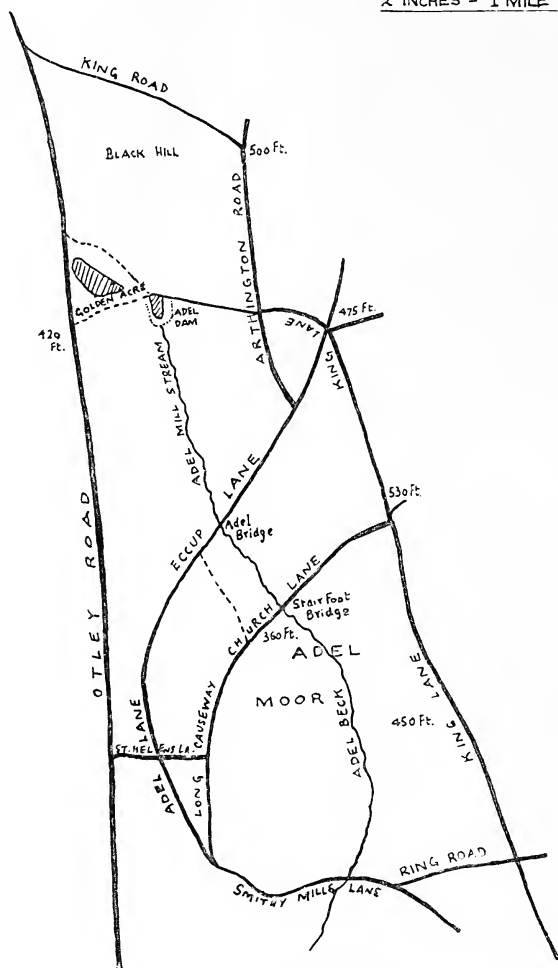
In several parts of the land of this area residences are now being erected and plots taken over by builders, and if not already reduced, the natural fauna and flora of the district must in time be adversely affected.

EXPLANATION OF ABBREVIATIONS

Locality abbreviations :—

- A.D. Adel Dame : The Dam and its immediate surroundings.
- A.M. Adel Moor : Bounded by King Lane to the east, Adel Beck to the west, Ring Road to the south, and Church Lane to the north.
- K.L. King Lane : The road and fields bordering the road.
- A. Adel : Not more particularly described.

2 INCHES = 1 MILE APPROX.



THE ADEL DISTRICT OF LEEDS

Abbreviations to recorders' names :—

H.C.	H. Crowther.	W.D.H.	W. D. Hincks.
C.J.C.	C. J. Caird.	T.B.K.	T. B. Kitchen.
A.D.	A. Denny.	E.W.M.	E. W. Morse.
J.R.D.	J. R. Dibb.	G.A.N.	G. A. Nelson.
J.D.F.	J. D. Firth.	W.D.R.	W. D. Roebuck.
E.C.H.	E. C. Horrell.	G.S.	G. Stanger.
C.W.H.	C. W. Horrell.	A.E.T.	A. E. Thornes.

The column headings in the list below are as follows :—

1. Family, genus and species.
2. Catalogue number—following Sir T. H. Beare's *Catalogue of Coleoptera of the British Isles*, 1930.
3. Locality.
4. Collected by.

1	2	3	4	1	2	3	4
CICINDELIDÆ.				<i>Ophonus pubescens</i> Müll.	112	A.	E.C.H. J.R.D.
<i>Cicindela campestris</i> L.	2	A.M.	E.C.H. J.D.F. J.R.D. W.D.H.	<i>Harpalus æneus</i> F.	114	K.L. A. A.D. K.L.	J.R.D. E.C.H. J.D.F. W.D.H.
CARABIDÆ.							
<i>Cychrus rostratus</i> L.	6	A.M.	W.D.H.			K.L.	J.R.D.
<i>Carabus violaceus</i> L. var. <i>sollicitans</i> Hampe.	11	A.M.	J.D.F. E.C.H. J.R.D.	<i>latus</i> L.	121	A.	J.D.F.
<i>monilis</i> F.	15	A. A.D.	E.C.H. C.W.H.	<i>Stomis pumicatus</i> Panz.	139	A.	J.D.F.
<i>Notiophilus biguttatus</i> F.	21	A.	J.D.F. C.W.H. J.R.D.	<i>Pterostichus madidus</i> F.	145	K.L. A.	J.R.D. E.C.H. J.R.D.
<i>palustris</i> Duft.	27	A.M. A.D.	W.D.H. W.D.H.	<i>niger</i> Schal.	152	A. A.D.	E.C.H. C.W.H.
<i>Leistus fulvibarbis</i> Dej.	32	A.M. A.D.	J.D.F. J.D.F.	<i>vulgaris</i> L.	153	A. A.	E.C.H. J.R.D.
<i>ferrugineus</i> L.	33	A. A.M.	J.D.F. J.R.D.	<i>nigrita</i> F.	155	A.D. A.	J.D.F. J.R.D.
<i>rufescens</i> F.	34	A.D.	W.D.H.	<i>minor</i> Gyll.	157	A.D.	T.B.K.
<i>Elaphrus cupreus</i> Duft.	43	A.D.	C.W.H. W.D.H. J.R.D.	<i>strenuus</i> Panz.	158	A.	J.D.F.
<i>Loricera pilicornis</i> F.	46	A. A.D.	C.W.H. C.W.H.	<i>diligens</i> Sturm.	159	A.D.	J.D.F.
<i>Clivina fossor</i> L.	47	A.M.	J.R.D.	<i>Amara apricaria</i> Payk.	166	A.	C.W.H.
<i>collaris</i> Hbst.	48	A.	T.B.K.	<i>bifrons</i> Gyll.	174	A.D.	J.D.F.
<i>Badister bipustulatus</i> F.	64	A.M.	W.D.H.	<i>lunicollis</i> Schiod.	182	A.	J.D.F.
<i>Bradycellus verbasci</i> Duft.	89	A.	W.D.H.	<i>familiaris</i> Duft.	186	A.	J.D.F.
<i>harpalinus</i> Serv.	90	A. K.L.	J.D.F. J.R.D.	<i>communis</i> Panz.	190	A.	J.D.F.
<i>similis</i> Dej.	92	A.D.	W.D.H.	<i>plebeia</i> Gyll.	193	A.M. A.	H.C. J.D.F.
<i>Trichocellus placidus</i> Gyll.	94	A.	J.D.F.	<i>Calathus fuscipes</i> Goeze.	194	A.M.	H.C.
<i>cognatus</i> Gyll.	95	A. K.L.	G.S. W.D.H.			A.	E.C.H.
						A.D.	W.D.H.
						A.M.	J.R.D.

1	2	3	1	1	2	3	4
<i>Calathus melanocephalus</i> L.	198	A.M. A. A.D. A.	H.C. E.C.H. C.W.H. J.R.D. W.D.H.	<i>Cercyon analis</i> Payk. <i>Megasternum boletophagum</i> Marsh.	591	A.	C.W.H.
<i>Agonum assimilis</i> Payk.	205	A.M. A.D. A.D. A.	J.D.F. C.W.H. J.R.D. W.D.H.	<i>Cryptopleurum minutum</i> F.	597 598	K.L. A.	W.D.H. J.D.F.
<i>dorsalis</i> Pont.	206	A.M. A. A.	H.C. E.C.H. J.R.D.	STAPHYLINIDÆ. <i>Aleochara lanuginosa</i> Grav.	611	A.	J.D.F. J.R.D.
<i>ruficornis</i> Goeze.	207	A.D. A.	C.W.H. J.R.D.	<i>Astilbus canaliculatus</i> F.	710	A.D.	E.C.H.
<i>mulleri</i> Hbst.	213	A.M. A. K.L.	J.D.F. E.C.H. J.R.D.	<i>Atheta (Metaxyia) elongatula</i> Grav.	745	A.D.	J.D.F.
<i>micans</i> Nic.	219	A.D.	J.R.D.	<i>Falagria sulcata</i> Payk.	907	A.	C.W.H.
<i>fuliginosum</i> Panz.	221	A. A.D.	J.D.F. W.D.H.	<i>Autalia impressa</i> Ol.	915	A.D.	W.D.H.
<i>gracilis</i> Gyll.	222	A.D. A. A.D.	J.D.F. J.D.F. J.R.D.	<i>Bolitochara lucida</i> Grav.	945	A.	W.D.H.
<i>thoreyi</i> Dej. ab.	224	A.	J.D.F.	<i>Tachyporus atriceps</i> Steph.	998	A.	C.W.H.
<i>puellum</i> Dej.	226	A.	J.D.F.	<i>hypnorum</i> F.	1001	A.	C.W.H.
<i>Olistophus rotundatus</i> Payk.	226	A.	J.D.F.	<i>pusillus</i> Grav.	1003	A.	A.E.T.
<i>Bembidion obtusum</i> Serv.	238	A.D.	C.W.H.	<i>nitidulus</i> F.	1004	A.D.	W.D.H.
<i>guttula</i> F.	239	A.	J.R.D.	<i>Tachinus humeralis</i> Grav.	1010	K.L.	J.R.D.
<i>biguttatum</i> F.	241	A.	J.D.F.	<i>rufipes</i> De G.	1015	A.D.	J.D.F.
<i>lampros</i> Hbst.	255	A.D. A.	J.D.F. J.R.D.	<i>laticollis</i> Grav.	1018	A.	C.W.H.
<i>nigricorne</i> Gyll.	256	A.M.	E.W.M.	<i>Bryocharis cingulata</i> Man.	1021	A.	J.D.F.
<i>decorum</i> Panz.	260	A.	J.D.F.	<i>analis</i> Payk.	1022	A.	J.D.F.
<i>nitidulum</i> Marsh.	261	A.D.	C.W.H.	<i>Bolitobius trinotatus</i> Er.	1029	A.	W.D.H.
<i>punctulatum</i> Drap.	280	A.	J.D.F.	<i>Quedius mesomelinus</i> Marsh.	1058	A.	J.D.F.
<i>dentellum</i> Thum.	284	A.D.	W.D.H.	<i>cinctus</i> Payk.	1071	A.M.	E.C.H.
<i>Trechus 4-striatus</i> Schrnk.	300	A. A.D.	C.W.H. T.B.K.	<i>fuliginosus</i> Grav.	1073	A.M.	J.D.F.
<i>Patrobus excavatus</i> Payk.	305	A. A.D.	J.D.F. J.D.F.	<i>tristis</i> Grav.	1074	A.	E.C.H.
<i>Dromius agilis</i> F.	325	A.D.	W.D.H.	<i>molochinus</i> Grav.	1075	A.D.	J.D.F.
<i>4-maculatus</i> L.	328	A.D.	W.D.H.	<i>Staphylinus pubescens</i> De G.	1099	A.	J.D.F.
<i>4-notatus</i> Panz.	329	A.D.	W.D.H.	<i>olens</i> Müll.	1105	A.M.	W.D.R.
HYDROPHILIDÆ.				<i>ænecephalus</i> De G.	1110	A.	J.D.F.
<i>Hydroporus obscurus</i> Sturm.	414	A.D.	J.D.F.	Note: recorded as <i>S. cupreus</i> Ross i, which			
<i>Agabus biguttatus</i> Ol.	425	A.M.	H.C.	is considered by Gridelli and others			
				to be a distinct species, but not			
				separated from <i>ænecephalus</i> in the			
				recent Brit. Cats.			
HYDROPHILIDÆ.				<i>brunnipes</i> F.	1108	A.D.	W.D.H.
<i>Megalelophorus aquaticus</i> L.	525	A.D.	J.R.D.	<i>fuscatus</i> Grav.	1109	A.D.	W.D.H.
<i>Hydræna riparia</i> Kug.	564	A.	J.D.F.	<i>Philonthus splendens</i> F.	1115	A.D.	J.D.F.
<i>Sphæridium scarabæoides</i> L.	573	A.D.	J.R.D.	<i>laminatus</i> Creut.	1117	A.D.	W.D.H.
<i>bipustulatum</i> F.	575	A.D.	J.R.D.	<i>politus</i> F. (re-			
<i>Cercyon hæmorrhoidalis</i> F.	583	A.	T.B.K.	corded as <i>aeneus</i> Rossi)	1118	A.D.	J.D.F.
<i>melanocephalus</i> L.	585	A.	C.W.H.			A.	C.W.H.
<i>unipunctatus</i> L.	586	A.	C.W.H.			K.L.	W.D.H.

1	2	3	4	1	2	3	4
<i>Philonthus chalcus</i> Steph. New to V.C. 64.	1119	A.	J.D.F.	<i>Necrophorus vespillo</i> L.	1545	A.D.	C.J.C.
<i>varius</i> Gyll.	1127	A. K.L. A.	C.W.H. W.D.H. J.R.D.	<i>Silpha tristis</i> Ill.	1547	A.	J.R.D.
<i>marginatus</i> Stroem.	1129	A.D.	J.R.D. W.D.H.	<i>Thanatophilus rugosus</i> L.	1553	A.D.	J.D.F.
<i>umbratilis</i> Grav.	1132	A.	C.W.H.	<i>Ceceptoma thoracicum</i> L.	1556	A.D.	C.J.C. J.R.D. W.D.H.
<i>finetarius</i> Grav.	1135	A.	J.D.F.	SCYDMÆNIDÆ.			
<i>sordidus</i> Grav.	1137	A.	E.C.H.	<i>Stenichmus exilis</i> Er.	1616	A.	E.W.M.
<i>longicornis</i> Steph.	1147	A.	C.W.H.	<i>Scydmaenus tarsatus</i> Müll.	(Note: 1623	Nat.,	1914, 15)
<i>varius</i> Payk.	1149	A.	C.W.H.		(Note: New to	V.C. 64.)	
<i>ventralis</i> Grav.	1150	A.	C.W.H.	TRICHOPTERYGIDÆ.			
<i>quisquiliarius</i> Gyll.	1152	A.	C.W.H.	<i>Ptenidium fuscicorne</i> Er.	1723	A.	C.W.H.
<i>Xantholinus punctulatus</i> Payk.	1184	A.	C.W.H.		(Note: New to	Yorks.)	
<i>linearis</i> Ol.	1191	A. A. A.	E.C.H. W.D.H. C.W.H.	COCCINELLIDÆ.			
<i>Leptacinus linearis</i> Grav.	1196	A.	C.W.H.	<i>Adalia bipunctata</i> L.	1767	A.	J.D.F.
<i>Baptolinus affinis</i> Payk.	1198	A.D. K.L. A.D.	T.B.K. J.R.D. W.D.H.	<i>10-punctata</i> L.	1768	A.	E.C.H.
<i>Othius punctulatus</i> Goeze.	1199	A. A.D. K.L.	J.D.F. W.D.H. J.R.D.	<i>Coccinella 7-punctata</i> L.	1772	A.	C.W.H.
<i>Lathrobium elongatum</i> L.	1203	A.	J.D.F.	<i>Calvia 14-guttata</i> L.	1780	A.	J.D.F.
<i>geminum</i> Kr.	1204	A.	A.E.T.	<i>Thea 22-punctata</i> L.	1782	A.D.	C.J.C.
<i>fulvipenne</i> Grav.	1207	A.	J.D.F.	<i>Coccidula rufa</i> Hbst.	1803	A.	J.D.F.
<i>brunnipes</i> F.	1210	A.D.	W.D.H.	<i>scutellata</i> Hbst.	1804	A.D.	J.R.D. W.D.H.
<i>Dianous cærulescens</i> Gyll.	1260	A.	J.D.F.	HISTERIDÆ.			
<i>Stenus junco</i> F.	1266	A.D.	C.W.H.	<i>Hister striola</i> Sahl.	1841	A.D.	J.D.F.
<i>flavipes</i> Steph.	1307	A.D.	C.W.H.	<i>Gnathoncus rotundatus</i> Kg.	1858	A.	E.W.M.
<i>bifoveolatus</i> Gyll.	1313	A.D.	C.W.H.		(Note: Nat., 19	12, 101.)	
<i>nitidiusculus</i> Steph.	1314	A.D.	J.D.F.	<i>Saprinus semistriatus</i> Serib.	1862	A.D.	J.D.F.
<i>Oxytelus sculptus</i> Grav.	1360	A.	C.W.H.	MICROPEPLIDÆ.			
<i>laqueatus</i> Marsh.	1361	A.	J.D.F.	<i>Micropeplus fulvus</i> Er.	1880	A.	E.W.M.
<i>nitidulus</i> Grav.	1366	A.	C.W.H.		(Note: Nat., 19	12, 101.)	
<i>tetracarinatus</i> Block.	1370	A.	J.D.F.	NITIDULIDÆ.			
<i>Trogophlæus bilineatus</i> Steph.	1377	A.	C.W.H.	<i>Cateretes bipustulatus</i> Payk.	1888	A.D.	J.R.D.
<i>Olophrum piceum</i> Gyll.	1417	A. K.L. A.	J.D.F. W.D.H. J.R.D.	<i>Epuræa depressa</i> Ill.	1898	A.D.	J.D.F.
<i>Omalius rivulare</i> Payk.	1432	A.	J.D.F.	<i>melina</i> Sturm.	1899	A.	J.D.F.
<i>Anthobium minutum</i> F.	1464	A.	J.R.D.	<i>deleta</i> Sturm.	1904	A.D.	J.R.D.
<i>Proctinus ovalis</i> Steph.	1469	A.	J.D.F.	<i>Meligethes viridescens</i> F.	1935	A.D.	J.D.F.
<i>brachypterus</i> F.	1470	A.	J.D.F.	<i>Glischrochilus 4-punctatus</i> L.	1965	A.	W.D.H.
SILPHIDÆ.				<i>Rhizophagus nitidulus</i> F.	1975	A.M.	E.W.M.
<i>Agathidium nigripenne</i> F.	1489	A.	W.D.H.	<i>dispar</i> Payk.	1976	A.D.	T.B.K.
<i>Anisotoma humeralis</i> F.	1502	A. A.D.	J.D.F. J.D.F.	<i>bipustulatus</i> F.	1977	A.	J.D.F.
<i>Necrophorus humator</i> Goez.	1540	A.D.	J.D.F.			A.D.	T.B.K.
<i>vespilloides</i> Hbst.	1541	A.D.	C.J.C.	MONOTOMIDÆ.			
				<i>Montoma longicollis</i> Gyll.	1991	A.	E.W.M.

1	2	3	4	1	2	3	4
LATHRIDIIDÆ.				EUCNEMIDÆ.			
<i>Lathridius lardarius</i> De G.	1995	A.	J.D.F.	<i>Throsus dermestoides</i> L.	2313	A.	J.D.F.
<i>Enicmus fungicola</i> Thoms.	2003	A.M.	E.W.M.			A.D.	W.D.H.
<i>Corticaria impressa</i> Ol.	2018	A.	J.D.F.	ELATERIDÆ.			
CUCUJIDÆ.				<i>Hypnoidus riparius</i> F.	2324	A.	J.D.F.
<i>Lamophloeus ferrugineus</i>						A.D.	T.B.K.
Steph.	2042	A.M.	E.W.M.	<i>Elater balteatus</i> L.	2338	A.	J.D.F.
BYTURIDÆ.						A.	J.R.D.
<i>Byturus tomentosus</i> F.	2057	A.	J.D.F.	<i>Athous difformis</i> Lacord.	2353	A.D.	W.D.H.
CRYPTOPHAGIDÆ.				<i>Melanotus rufipes</i> Hbst.	2347	A.D.	W.D.H.
<i>Cryptophagus ruficornis</i>							G.A.N.
Steph.	2073	A.	C.W.H.	<i>Athous hæmorrhoidalis</i> F.	2354	A.D.	J.D.F.
<i>saginitus</i>				<i>Limoniinus minutus</i> L.	2358	A.D.	W.D.H.
S Sturm.	2077	A.	C.W.H.	<i>Agriotes obscurus</i> L.	2364	A.	J.D.F.
<i>scanicus</i> L. ab.						A.	J.R.D.
<i>patruelis</i> Sturm.	2080a	A.	C.W.H.	<i>pallidulus</i> Ill.	2368	A.	J.D.F.
<i>Atomaria apicalis</i> Er.	2131	A.	J.D.F.			A.D.	C.W.H.
<i>analis</i> Er.	2132	A.	C.W.H.	<i>Dolopius marginatus</i> L.	2369	A.	J.D.F.
SCAPHIDIIDÆ.						A.D.	C.W.H.
<i>Scaphisoma agaricum</i> L.	2138	A.	J.D.F.	<i>Corymbites cupreus</i> F.	2372	A.D.	J.D.F.
MYCETOPHAGIDÆ.				var. <i>aruginosus</i> F.	2372a	A.M.	W.D.H.
<i>Gyphaea stercorea</i> L.	2141	A.	J.R.D.	<i>Denticollis linearis</i> L.	2380	A.	J.D.F.
<i>Mycetophagus 4-pustulatus</i>	2146	A.D.	W.D.H.			A.D.	W.D.H.
BYRRHIDÆ.						A.D.	J.R.D.
<i>Byrrhus pilula</i> L.	2174	K.L.	J.R.D.	DASCILLIDÆ.			
<i>Cytilus sericeus</i> Foerst.	2178	A.	C.W.H.	<i>Helodes minuta</i> L.	2382	A.	J.D.F.
<i>Simplocaria semistriata</i> F.	2180	A.	C.W.H.			A.D.	J.D.F.
SCARABÆIDÆ.				<i>marginata</i> F.	2383	A.	J.D.F.
<i>Aphodius erraticus</i> L.	2222	A.D.	W.D.H.	<i>Cyphon coarctatus</i> Payk.	2386	A.	J.D.F.
<i>fossor</i> L.	2224	A.M.	H.C.	<i>variabilis</i> Thunb.	2388	A.	J.D.F.
<i>functarius</i> L.	2228	A.M.	H.C.	LAMPYRIDÆ.			
		A.D.	C.W.H.	<i>Lampyrus noctiluca</i> L.	2400	A.	W.D.R.
		A.	J.R.D.	CANTHARIDÆ.			
			W.D.H.	<i>Cantharis livida</i> L.	2407	A.	J.D.F.
<i>ater</i> De G.	2230	A.D.	J.R.D.	<i>pellucida</i> F.	2408	A.	J.D.F.
<i>granarius</i> L.	2232	A.	C.W.H.			A.D.	W.D.H.
<i>putridus</i> Hbst.	2237	A.M.	H.C.	<i>pallida</i> Goeze.	2414	A.D.	W.D.H.
<i>merdarius</i> F.	2249	A.D.	J.R.D.	<i>paludosa</i> Fall.	2416	A.	J.D.F.
<i>punctato-sulcatus</i>				<i>Rhagonycha testacea</i> L.	2423	A.	J.D.F.
S Sturm.	2255	A.	J.R.D.			K.L.	J.R.D.
			W.D.H.	<i>limbata</i> Thunb.	2424	A.	J.D.F.
		A.D.	W.D.H.	<i>lignosa</i> Mell.	2425	A.D.	C.J.C.
<i>Heptaulacus testudinarius</i> F.	2264	A.M.	H.C.	<i>Malthinus flavicollis</i> Payk.	2427	A.	W.D.H.
<i>Geotrupes stercorarius</i> L.	2279	A.	W.D.R.	<i>Malthodes marginatus</i> Lat.	2431	A.D.	J.R.D.
		A.	J.D.F.	<i>minimus</i> L.	2437	A.	J.D.F.
		A.	J.R.D.	CHIDÆ.			
<i>stercorosus</i> Scrib.	2281	A.	J.D.F.	<i>Cis toletti</i> Scop.	2529	A.	J.D.F.
<i>Serica brunnea</i> L.	2289	A.D.	W.D.H.	<i>Octotemnus glabriusculus</i>			
				Gyll.	2550	A.	C.W.H.

1	2	3	4	1	2	3	4
CERAMBYCIDÆ.				<i>Chaetocnema concinna</i> Marsh.	2834	A.D.	J.D.F.
<i>Rhagium mordax</i> De G.	2572	A.D.	A.D.			A.	J.R.D.
		A.	W.D.R.	<i>Cassida flaveola</i> Thunb.	2864	A.D.	W.D.H.
		A.	J.D.F.	(Note : <i>Nat.</i> , 1	935, 47.)		
		A.	J.R.D.	<i>viridis</i> L.	2865	A.	J.D.F.
<i>bifasciatum</i> F.	2574	A.D.	A.D.				
			W.D.R.	TENEBRIONIDÆ.			
		A.	E.C.H.	<i>Platydemus metallicum</i> F.	2880	A.	W.D.H.
LARIIDÆ.							
<i>Bruchidius cisti</i> Payk.	2615	A.D.	J.D.F.	MELANDRYIDÆ.			
		A.	J.D.F.	<i>Tetratoma fungorum</i> F.	2910	A.D.	J.D.F.
						A.D.	J.R.D.
							W.D.H.
CHRYSOMELIDÆ.							
<i>Timarcha coriaria</i> Laich.	2685	A.	E.C.H.	PYTHIDÆ.			
		A.M.	J.R.D.	<i>Rhinostinus planirostris</i> F.	2940	A.	J.D.F.
		A.	W.D.H.			A.D.	C.J.C.
<i>Chrysomela staphylea</i> L.	2690	A.M.	W.D.R.			A.D.	J.R.D.
<i>polita</i> L.	2691	A.	J.D.F.				
		A.D.	T.B.K.	CEDEMERIDÆ.			
		A.D.	W.D.H.	<i>Nacerda melanura</i> L.	2948	K.L.	W.D.H.
<i>Gastroides viridula</i> De G.	2709	A.D.	J.R.D.	(Note : New to V, C. 64.)			
		A.D.	J.D.F.				
		A.D.	W.D.H.	PYROCHROIDÆ.			
<i>polygoni</i> L.	2710	A.D.	J.D.F.	<i>Pyrochroa serraticornis</i> Scop.	2954	A.	A.D.
		A.	J.R.D.				
			W.D.H.	MORDELLIDÆ.			
<i>Phædon tumidulus</i> Germ.	2712	A.D.	C.J.C.	<i>Anaspis rufilabris</i> Gyll.	2971	A.	J.D.F.
		A.	J.R.D.	<i>humeralis</i> F.	2974	A.	J.D.F.
<i>armoriacæ</i> L.	2713	A.	J.D.F.	<i>regimbarti</i> Schil.	2975	A.D.	J.D.F.
<i>cochleariæ</i> F.	2714	A.D.	J.D.F.	<i>maculata</i> Fourc.	2978	A.	?E.C.H.
<i>Phyllodecta vitellinæ</i> L.	2718	A.D.	J.D.F.				
		K.L.	W.D.H.	MELOIDÆ.			
		A.	J.R.D.	<i>Meloe proscarabæus</i> L.	2996	A.	J.D.F.
<i>Hydrothassa marginella</i> L.	2720	A.	J.D.F.			A.	J.R.D.
		A.D.	J.R.D.	<i>violaceus</i> Marsh.	2997	A.	A.D.
			W.D.H.	(Note : <i>Nat.</i> , 4, 174.)			
<i>Prasocuris junci</i> Brahm.	2722	A.	J.R.D.				
<i>phellandrii</i> L.	2723	A.D.	J.D.F.	CURCULIONIDÆ.			
		A.D.	J.R.D.	<i>Byctiscus betulæ</i> L.	3017	A.	J.D.F.
<i>Luperus longicornis</i> F.	2726	A.	J.D.F.			A.D.	W.D.H.
		A.M.	J.D.F.	<i>Rhynchites germanicus</i> Hbst.	3025	A.D.	J.R.D.
		A.	W.D.H.	<i>longiceps</i> Thunb.	3030	A.	E.C.H.
		A.M.	W.D.H.	(Note : New to V, C. 64.)			
<i>Lochmoe suturalis</i> Thoms.	2729	A.	J.D.F.			A.	J.D.F.
		A.	W.D.H.	<i>Apion ulicis</i> Forst.	3039	K.L.	C.J.C.
		A.M.	J.R.D.	<i>frumentarius</i> Payk.	3049	A.D.	W.D.H.
		A.D.	W.D.H.	<i>apricans</i> Hbst.	3062	A.	J.D.F.
<i>Longitarsus suturellus</i> Duft.	2753	A.D.	W.D.H.			K.L.	W.D.H.
<i>Phyllotreta undulata</i> Kuts.	2791	A.	J.D.F.			A.D.	W.D.H.
		A.D.	W.D.H.	<i>violaceum</i> Kirby.	3113	A.	J.D.F.
		A.	J.R.D.			A.D.	J.D.F.
<i>Sphæroderma testaceum</i> F.	2809	A.	J.R.D.			K.L.	J.R.D.
<i>Apteropeda orbiculata</i> Marsh.	2810	A.	T.B.K.				W.D.H.
<i>Crepidivora ferruginea</i> Scop.	2824	A.	J.D.F.	<i>curtirostre</i> Germ.	3115	A.D.	C.W.H.
		A.D.	W.D.H.			A.	J.D.F.

1	2	3	4	1	2	3	4
<i>Otiorrhynchus rugosostriatus</i>				<i>Phytonomus arator</i> L.	3221	A.	W.D.H.
Goeze.	3124	A.	J.D.F.	<i>plantaginis</i>			
<i>singularis</i> L.	3128	A.D.	J.D.F.	De G.	3227	A.	J.D.F.
		A.	J.R.D.	<i>Liosoma deflexum</i> Panz.	3243	K.L.	J.R.D.
			W.D.H.			A.D.	W.D.H.
<i>sulcatus</i> F.	3129	A.	C.J.C.	ab. <i>collaris</i> Rye.	3243a	K.L.	J.R.D.
<i>Cænopsis fissirostris</i> Walt.	3147	A.M.	J.R.D.	<i>Hyllobius abietis</i> L.	3248	A.D.	C.W.H.
(Note : New to Yorks.				<i>Orchestes fagi</i> L.	3260	A.D.	W.D.H.
and North of England,				<i>Rhamphus pulicarius</i> Hbst.	3268	A.	J.D.F.
Natl., 1934, 55.)				<i>Grypidius equiseti</i> F.	3275	A.	J.D.F.
<i>Strophosomus melanogrammus</i>					(Note : New to V.C. 64.)		
Forst.	3149	A.D.	J.D.F.	<i>Nolaris acridulus</i> L.	3278	A.	J.D.F.
		A.	J.D.F.	<i>Dorytomus tortrix</i> L.	3285	A.D.	J.R.D.
		A.	J.R.D.				W.D.H.
<i>Brachysomus echinatus</i> Bons.	3162	A.D.	W.D.H.	<i>Cionus scrophulariae</i> L.	3376	A.	J.D.F.
<i>Liophloeus tessulatus</i> Müll.	3169	A.D.	C.W.H.	<i>alauda</i> Hbst.	3381	A.	J.D.F.
<i>Polydrosus cervinus</i> L.	3177	A.D.	W.D.H.	<i>Cidnorrhinus quadrimaculatus</i>			
<i>Phyllobius oblongus</i> L.	3180	A.	J.R.D.	L.	3395	A.	J.D.F.
<i>pyri</i> L.	3183	A.	J.D.F.	<i>Ceuthorrhynchus pollinaris</i>			
		A.D.	C.W.H.	Forst.	3417	A.D.	J.D.F.
<i>argentatus</i> L.	3184	A.	J.D.F.			A.	J.D.F.
		A.	J.R.D.	<i>Rhinoncus gramineus</i> Bed.	3460	A.D.	J.D.F.
<i>pomorae</i> Ol.	3186	A.	J.D.F.				
<i>viridis</i> Laich.	3187	A.	J.D.F.	IPIDÆ.			
<i>Sitona regensteinensis</i> Hbst.	3199	A.	C.W.H.	<i>Xyloterus domesticus</i> L.	3560	A.D.	T.B.K.
<i>lineatus</i> L.	3211	A.	J.D.F.			A.D.	W.D.H.
		A.D.	J.D.F.				

Number of species : 298.

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COMPILED BY W. E. L. WATTAM

It is not an index in the strictest sense of that term, but it is a classified summary of the contents of the volume, arranged so as to be of assistance to active scientific investigators; the actual titles of papers not always being regarded so much as the essential nature of their contents.

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Yorkshire Naturalists' Union.

President:

W. H. PEARSALL, D.Sc., F.L.S., Leeds.

Hon. Secretary:

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary:

J. HARTSHORN, The Mount, Leyburn.

The 402nd Meeting

WILL BE HELD AT

K E L D

for the investigation of Upper Swaledale

On Saturday, 15th May, 1937
to Monday, 17th May, 1937

HEADQUARTERS.—Cathole Hotel, Keld (W. R. Hutchinson).
Terms: 7/6 per day. Accommodation is restricted and early application is necessary, other houses in the village are available, and more accommodation can be had in Muker; your Secretary will endeavour to assist any who find difficulty in obtaining rooms. Members prepared to share rooms are more certain of accommodation at Headquarters where some of the rooms are large.

TRAVEL FACILITIES.—There is a bus service from Richmond but at the time of writing the summer time-table is not available. Details will be given on the cover of the May issue of *The Naturalist*. The proprietor of the Cathole has a car and will meet parties by arrangement.

ROUTES.—The following have been provisionally fixed but weather conditions will decide which days are best for the longer walks and notice of the day's route will be left at headquarters.

Whitsundale and Birkdale Tarn ;

Around Kisdon to the Force and back over the hill ;

To Great Shunner Fell via Great Sleddale Beck.

BOOKS AND MAPS.—Sheets 14 and 20 of the Large Sheet Series, one inch to the mile, Ordnance Survey maps cover the area. Kendall and Wroot's *Geology of Yorkshire*, *The Geology of the Yorkshire Dales* by Messrs. Hudson, Bisat, Haywood, and Raistrick, reprinted from *Proc. Geo. Asso.*, XLIV, 143, 1933 ; J. G. Baker, *North Yorkshire*. Y.N.U. Circulars No. 153, 1900, and No. 285, 1920, and the account of this latter meeting in *The Naturalist*, 1920, p. 253, all deal with the area.

THE DISTRICT.—In Upper Swaledale the limestone beds are more widely spaced than were those of Upper Wensleydale and the fissured, massive limestone of the Craven area with its characteristic flora has given place to the upper part of the Yoredale series where shales predominate ; these shales are placed above the limestone bands and they are followed by sandstones beds and then occasionally a trace of coal. Swaledale is much more steeply cut out than Wensleydale, the area has been more subjected to faulting, one of the largest faults being the Stockdale vein which runs from Thwaite to Gunnerside, the district is rich in mineral veins and lead has been extensively mined, Chert is still being obtained here. The Undersett limestone will be seen at Kisdon force and at Keld we are on the Main limestone which is quarried on the hill side of Kisdon where the exposed limestone is almost made up of corals, chiefly *Dibunophyllum*. Geologists have an opportunity of making a collection of fossils of the Main limestone in these quarries ; another interesting section is that known as the Mirk Fell limestone series which are the top beds of the Yoredales, *Cravenoceras malhamense* is known from them. In the Reeth circular, 1920, Professor A. Gilligan suggested that a look-out should be kept for erratics foreign to the dale, none having been found.

Botanists may be interested in noting the difference in the flora from that seen on the much drier limestone area in Craven ; limestone is still plentiful but the interbedded shales must keep the soil much wetter ; how does this act on plants like Rockrose, Blue Moorgrass, Salad Burnet, Hoary Plantain, *Galium sylvestre*, *Geranium sylvaticum*, etc ?

Ornithologists may be interested by the extensive Birkdale Tarn at 1,600 feet O.D. A list of birds of Swaledale and Arkengarthdale, some 122 species, is given in *The Naturalist*, 1892, pp. 309-325. The Wheatear, Yellow Wagtail, Ring Ousel, Dipper, and Golden Plover will be seen generally and the following may quite possibly be noted :—Raven, Common Buzzard, Peregrine, Blackcock, Dunlin, and Twite.

FLOWERING PLANTS, FERNS, etc.—The highest summits are areas of Millstone grit and peat and here the Cloudberry, *Rubus chamæmorus*, grows and *Salix herbacea*. The Parsley fern, *Cryptogramme crispa*, is on

the Gritstone screes and *Epilobium alsinefolium* may be found in the highest streamlets. On the uppermost limestone area near Tail Brig towards the Westmorland border the Rev. W. Crombie is said to have found *Dryas octopetala* in 1894 and confirmation of this locality would be of great value. On lead mine refuse *Arenaria verna* and *Thlaspi occitanum* will be found. Juniper has been reported from many of the ghylls running into Swaledale and evidence of a previous and more widespread growth may be sought for in decaying stumps where no Juniper is now evident. (See A. M. Smith, *Nat.*, 1936, p. 177.) Among other plants recorded by Baker in his *North Yorkshire* for the lower part of Stonesdale and the Kisdon gorge are *Draba incana*, *Viola lutea*, *Rubus saxatilis*, *Rosa spinosissima*, *Ribes petraeum*, *Saxifraga hypnoides*, *Galium sylvestre*, *Hieracium anglicum*, *murorum*, *gothicum*, *crocatum*, and *prenanthoides*, *Salix phylicifolia*, *Poa nemoralis*, and *Asplenium viride*. In the lower parts an abundance of *Carduus heterophyllus* will be seen.

Another very interesting plant to be sought is *Arenaria gothica*, the late Dr. F. Arnold Lees said that he gathered this on the road side between Reeth and Gunnerside on a hurried walk in the rain, judging by its distribution around Ingleborough, the higher limestone areas at Keld are likely places for the plant.

MOSES AND HEPATICS.—The late W. Ingham published a list of Mosses from around Reeth in *The Naturalist*, 1900, p. 290. He cited a new Moss to Yorkshire at the foot of the limestone cliff between Farnhill and Reeth, *Grimmia montana* B. and S.; it grew in small, round, flat black patches on the boulders at the foot of the cliff. Other Mosses he mentions are *Leptodontium flexifolium* Hpe., *Eurhynchium crassinervium* B. and S., *Fontinalis squamosa* L., *Hypnum ochraceum* Turn., *Brachythecium rivulare* B. and S., *Dichodontium flavesces* Ldb., *Polytrichum alpinum* L., *Zygodon Mougeotii* B. and S., *Plagiobryum Zierii* Ldb., *Orthothecium intricatum* B. and S., *Plagiothecium pulchellum* B. and S.

Other Mosses which might occur and should be looked for are *Hylocomium rugosum* De Not., *Cylindrothecium concinnum* Schp., *Thuidium Philiberti* Limpr., *T. delicatulum* Mitt., *Pseudoleskea catenulata* B. and S.

Messrs. Burrell and Milsom gave a good list of Mosses and Hepatics from the district in *The Naturalist*, 1920, p. 256, which should be consulted. In this same article the late F. A. Mason gives a long list of the fungi of the area then worked. The late R. Barnes made several interesting discoveries of Mosses in this area among others are: *Andreæa alpina* Sm. (Kisdon Scars); *Seligeria acutifolia* var. *longisetula* Lindb. (Kisdon Force); *S. tristica* B. and S. (Upper Force, Kisdon Scar); *Trichostomum nitidum* Schpr. (Walls, Keld); *T. tortuosum* Ehrh. (fruiting, Kisdon Scars); *Weisia curvirostris* var. *commutata* Dixon. (Kisdon Force); *Barbula sinuosa* Braith. (Kisdon Force); *Rhacomitrium protensum* Braun. (riverside above Keld); *Bryum concinnum* Spruce. (Kisdon Force); *Bryum roseum* Schreb. (Kisdon Force); *Bartramia pomiformis* var. *crispa* S. (Scars opposite smelt mill, Keld); *Anomodon longifolius* Nartm. (Keld, stony ground at root of trees); *Amblystegium confervoides* and *Sprucei* (Kisdon Force); *Eurhynchium Teesdalei* Schp. (Kisdon Force); *Hylocomium*

brevirostre B. and S. (Kisdon Force) ; *Hypnum hispidulum* var. *Sommerfeltii* (near Kisdon Force) ; *Neckera pumila* Hedn. (fruiting, Kisdon Force).

ENTOMOLOGY.—Little seems to be known about the Lepidoptera of Upper Swaledale, but the Coleoptera have been better worked and Dr. Fordham sends the following list of beetles : *Carabus nitens*, *Bembidion mannerheimi*, *B. atrocoeruleum*, *B. saxatile*, *Bradycellus cogantus*, *B. collaris*, *B. similis*, *Patrobis assimilis*, *Calathus micropterus*, *Haliplus fluviatilis*, *Hydroporus davisii*, *H. umbrosus*, *Agabus congener*, *Atheta islandica*, *A. tibialis*, *Megacronus cingulatus*, *Quedius auricomus*, *Geodromicus nigrata*, *Lesteva sharpi*, *Olophrum fuscum*, *Stenus foveicollis*, *Dryops ernesti*, *Aphodius lapponum*, *Aegialia sabuleti*, *Corymbites cupreus* var. *aeruginosus*, *Phyllobius viridicollis*, *Limobius dissimilis*.

ARACHNIDA.—In *The Naturalist* in the account of the 1920 meeting at Reeth, Mr. W. Falconer gives a long list of the Spiders (some 47 species) and Mites which he collected on this occasion.

CONCHOLOGY.—The late Greevz Fysher noted the following : *Helix hortensis* var. *lutea*, *Helicigona arbustorum*, *Hygromia striolata*, *H. hispida*, *Hyalinia nitidula*, *H. alliaria*, *Pyramidula rotundata*, *Clausilia laminata*, *C. bidentata*, *Limnæa peregra* var. *ovata*, *Ancylus fluviatilis*.

FRESH WATER BIOLOGY.—J. M. Brown writes :—The members of the Fresh-water Biology Committee, which holds its field meeting during the present excursion of the Union, should find ample opportunities for investigating an almost unworked area. The district will provide plenty of suitable streams in which some of the less-known upland species may well be looked for. Perhaps the most interesting species which has been taken here is the Stonefly, *Capnia vidua*, which I obtained in Upper Swaledale, 3/4/32. The wet rocks neighbouring the Kisdon Force and other falls in the district should yield such larvae as *Orphnephila testacea* (Diptera), *Tinodes assimilis* and *Crunoecia irrorata* (Trichoptera), and other members of the hygropetric fauna, and should provide suitable spots for making a study of this interesting animal association.

MEETING.—Tea, 2/- per head, will be had at headquarters on Monday, May 17th, at 5-30 p.m. This will be followed by a general meeting at 6 p.m. when reports on the meeting will be given and names of persons wishing to join the Union will be submitted for election. Further names of intending members should be sent to the Hon. Secretary in time for this meeting.

The next meeting of the Union will be held on June 5th at Hutton le Hole in Vice-county 62.

Yorkshire Naturalists' Union.

President :

W. H. PEARSALL, D.Sc., F.L.S., Leeds.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary :

G. B. WALSH, B.Sc., Linthorpe, Stepney Drive, Scarborough.

The 403rd Meeting

WILL BE HELD AT

HUTTON-LE-HOLE

On Saturday, 5th June, 1937

HEADQUARTERS.—White Horse Hotel, Kirby Moorside. Terms : Supper, bed and breakfast, 8/-.

TRAVEL FACILITIES.—Kirby Moorside is best reached by private car if possible, as both train and bus services are not very convenient. The summer programmes for these are not yet issued, but by present arrangements there is a train from York at 9-57 a.m., arriving at Kirby Moorside at 11-22 ; and there is a train from Scarborough at 8-40 a.m., arriving at 10-4. The return trains are 6-11 p.m. and 6-35 p.m. respectively. A bus from Middlesbrough leaves at 8-30 a.m., reaching Kirby at 11-4 ; the returns are at 7-11 p.m. (arriving 9-28) and 8-26 p.m. (arriving 10-45). From Scarborough the corresponding times are 8-30 a.m. (arriving at Kirby at 9-56), and 6-19 p.m. (arriving Scarborough 7-45) and 7-34 p.m. (arriving Scarborough 9).

ROUTE.—The party will meet at 11-10 a.m. opposite the White Horse Hotel at Kirby Moorside ; there is ample parking accommodation if necessary

in the Market Place. The leader will be Mr. R. Wilfred Crosland (Ornithology and Botany), assisted by Mr. R. Hayes (Lepidoptera). It will be best to go by car as far as possible with the leader, leaving the car in the lane. The route will be by the first road to the left on the Scarborough road after passing Kirby Moorside Station, then sharp right at top for $1\frac{1}{4}$ miles to Green Holt Quarry. Cars should be left about here. Botanists can follow the wood up to Gillamoor, and then take the footpath back along the top of the wood. Distance 4 to 5 miles. Geologists will find the quarry of interest, and entomologists can work the wood or go down into the valley and work along the stream.

PERMISSIONS.—Permissions to visit their estates have been kindly granted by Admiral Sir Cyril Fuller, Capt. V. H. Holt, and Mr. J. Baxter. It is hoped that visitors will be as careful as possible not to disturb game, and especially breeding birds.

BOOKS AND MAPS.—The Pickering and District Map, Sheet 22, of the one-inch Ordnance covers the area. Baker's *North Yorkshire* and Kendall and Wroot's *Geology of Yorkshire* may be consulted.

THE DISTRICT.—The route follows Douthwaite Dale, a pretty valley running up into the moorland. It is well wooded, and with a great variety of aspect, moisture conditions and subsoil offers interesting ground for collectors of natural history specimens and for studies of ecological problems. Hutton-le-Hole is on the opposite side of the Dale, but hidden from view.

Mr. E. G. Highfield writes :—‘ Notes on the Geology and Botany of the Hutton-le-Hole District ’: The district is situated on the rocks of the Upper Oolite. The strata dip to the south at an angle of about 1 in 10. They rise to a prominent ridge, the oolitic escarpment, which runs east and west; its height is about 500 feet above sea-level. The Oxford Clay outcrops on the north side of the ridge, making a steep moist slope. On the south side the average slope of the surface is rather less than the dip of the strata, so the different formations are crossed in succession.

The escarpment has been cut through by a number of streams flowing from north to south. Catterbeck, the stream which flows through Hutton-le-Hole, is now cutting through the Oxford Clay; as it passes over Appleton Common it crosses the outcrop of the oolitic limestone and here the water subsides, leaving a dry rocky bed. The Dove, which comes down Farndale and Douthwaite Dale, has cut its channel much deeper and has got below the limestone layer, so the water does not subside.

BOTANY.—The following are some of the plants found in the district :—Deadly Nightshade (*Atropa belladonna*), Baneberry, and Hound's-tongue (*Cynoglossum officinalis*) are plentiful on the limestone. Herb Paris and Herb Christopher grow in the woods in Douthwaite Dale. Butterwort and sundew are abundant in moist moorland situations especially on Barmoor. Chickweed wintergreen (*Trientalis*) may be looked for on the northern slopes of the escarpment, generally growing with bilberry. Adder's tongue should be found in Douthwaite Dale and moonwort in rather dry meadows bordering on moorland. Orchids known in the district are: Greenwing, early purple, tway blade, frog, butterfly, spotted, fragrant, marsh, bee, pyramid, and broad-leaved helleborine.

ORNITHOLOGY—BIRDS (Douthwaite Dale).—Mr. R. Wilfred Crosland writes :—

(a) **BREEDING IN THE DALE OR WITHIN ABOUT 3 MILES.**—Snipe, Sand-piper, Dipper, Mallard, Peewit, Landrail, Moorhen, Pheasants (crosses

with introduced varieties are common), Rooks (one rookery in the Dale), Goldfinch, Meadow Pipit, Tree Pipit, Goldcrest, Long-tailed Tit, Coal Tit, Blue Tit, Great Tit, Whitethroat, Blackcap, Garden Warbler, Grasshopper Warbler, Sedge Warbler, Willow Warbler, Wood Warbler, Chiffchaff, Redstart, Stonechat, Whinchat, Spotted Flycatcher, Pied Flycatcher (once, 1933), Green Woodpecker, Barn Owl, Tawny Owl.

(b) BREEDING WITHIN 10 MILES.—Curlew, Golden Plover, Woodcock, Ring Ousel, Wheatear, Nightjar, Merlin.

(c) VISITORS, ETC., NOT KNOWN TO BREED (some *in the dale*, others within 7 miles).—Heron, Sea Gulls (mostly Herring Gull), Little Auk (one in 12 years), Snow Bunting (*regular* winter visitor), Waxwing (casual), Tree Creeper, Great Spotted Woodpecker, Lesser Spotted Woodpecker, Kingfisher, Little Owl, Cormorant (two in 12 years), Brambling.

Several of the most common varieties are not listed.

A general impression of the birds of the district is that I have no knowledge of any other area where variations of plumage are so common, *e.g.* Blackbirds with varying amount of white, Housesparrows with white feathers in unexpected places, Blue Tits with varying collars, cheek patches, eye stripes, etc. Some of the winter Mistle Thrushes were of a type new to the late T. A. Coward.

ENTOMOLOGY.—COLEOPTERA—Dr. W. J. Fordham writes :—The following beetles have been taken in the neighbourhood of Kirby Moorside :—

Nebria gyllenhali, *Atheta elongatula*, *Ocyopus morio*, *Philonthus atratus*, *Dianous coerulescens*, *Silpha atrata*, *Cryptophagus pilosus*, *Adalia oblitterata*, *Elmis volkmari*, *Rhagonycha fuscicornis*, *Dryophilus pusillus*, *Chrysomela varians*, *Phytodecta pallida*, *Epitrix atropæ*, *Crepidodera rufipes*, *Omius mollinus*, *Polydrosus pterygomalis*, *Orchestes quercus*, *Cæliodes geranii*, *Scolytus destructor*.

BUTTERFLIES.—Mr. R. Hayes writes :—

- P. napi*. In fields and borders of the woodland, Rumsgill.
- E. cardamines*. Fields, and on the river bank.
- A. selene*. In gale slacks near Lowna and on Gillamoor Bank, and Rumsgill.
- A. euphrosyne*. In woodland paths near Toadwath.
- V. urticae*. Common on the limestone, Toadwath Bank.
- V. cardui*. Occasionally found near Toadwath.
- C. pamphilus*. Common everywhere on the open banks.
- T. rubi*. On bilberry above Lowna and parts of Low Fardale, rests in pine trees.
- L. astrarche*. On the limestone slopes, Tapley Valley, and below and above Toadwath Mill.
- L. icarus*. In meadows by the River Dove.
- N. lucina*. In disused quarries and on limestone slopes, Toadwath, and common near Douthwaite.
- N. tages*. On waste ground by the river and in clearings of woodland.
- H. sylvanus*. By the river, as last species.

MOTHS.

- C. porcellus*. Rare but larva has been taken in Rumsgill.
- Derasa* and *batis*. Common in Rumsgill at sugar.
- Duplaris*. At sugar, Rumsgill.
- L. quercus*. On moorland E. of Lowna, male common.
- M. rubi*. As above species.
- S. pavonia*. Gillamoor Bank and Lowna.
- D. falcataria*. On alders by riverside above Lowna.
- Menthastri*. Local and *lubricipeda*, common in woodland.
- S. foliginosa*. On Toadwath Bank, local.
- P. plantaginis*. Common on moorland, Lowna and Douthwaite.
- D. sanio*. On moorland, Lowna and Douthwaite.

A. psi. On tree-trunks, Douthwaite and Rumsgill.
A. strigula. On moorland, near Lowna and Hutton Nab.
N. plecta. Toadwath Common.
A. nebulosa. Rumsgill, at sugar.
M. thalassina. As above.
Dentina. As above.
C. graminis. Common June to August on Toadwath Bank.
Basilinea. On Toadwath Bank.
Lucipara. At sugar, Rumsgill and Douthwaite.
X. areola. On trees, Toadwath Mill and Rumsgill.
C. verbasci. Larva on mullein, Toadwath Bank.
Umbratica. Rumsgill.
A. myrtilli. Abundant on moorland, Gillamoor Bank, Lowna, and Douthwaite.
P. viridaria. On moorland as above species.
Chrysitis, iota, and gamma. Common in woodlands.
E. mi. Abundant, Toadwath Bank.
Bisetata. In Rumsgill.
O. plumbaria. On limestone slopes, Toadwath and Douthwaite.
Halterata. Local in woodlands, Douthwaite.
Truncata, immanata. Common, as above.
Suffumata. Common. *Designata.* Common.
Viridaria. On moorland, Lowna.
Tristata. Moorland, above Lowna, Low Fardale.
Ocellata. As above.
Impluviata. On banks of the Dove in alders.
Vulgata and nanata. Common on moorland.
Sylvata (scarce). In Rumsgill.
Marginata. In hedgerows near Toadwath Mill.
Pusaria. Common in Rumsgill and Douthwaite.
Pulveraria. On trees, Rumsgill and Douthwaite.
Margaritaria. Toadwath Mill and Rumsgill.
Lunaria. Douthwaite, rare.
Bidentata. Common, as above. *Luteolata.* Common.
Atomaria. Common, moorland, Lowna and Douthwaite.
Piniaria. Common, as above.
Wauaria. Rumsgill.
Petraria. Moorland, common.
Fagaria. Moorland, near Hutton, local.
Strigillaria. As above, common.
Trifolii. On Toadwath Bank.
I. statices. Toadwath Bank, limestone slopes.
Humuli. Common, Douthwaite.
Sylvinus. Local, Toadwath Bank.
Lupulinus. Common, all localities.
Fusconebulosa. On moorland, Lowna, gale slacks.
Hectus. On moorland as above.

Above Lowna in Hagg Wood there are nests of wood ants under pine trees.

The district has not been worked by other naturalists, and detailed observations will be useful.

MEETING.—Tea, 2/6 per head for a meat tea, and 1/6 per head for a plain tea, may be had at the White Horse Hotel at 5-30. This will be followed by a general meeting at 6 p.m., when reports on the meeting will be given, and it is hoped that names of persons wishing to become members of the Union will be submitted for election.

The next meeting of the Union will be at Bubwith on June 26th, this is in Vice-County 61.

Yorkshire Naturalists' Union.

President :

W. H. PEARSALL, D.Sc., F.L.S., Leeds.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary :

C. W. MASON, 15 Park Avenue, Hull.

The 404th Meeting

WILL BE HELD AT

BUBWITH

On Saturday, 26th June, 1937

HEADQUARTERS.—White Swan Inn, Bubwith, near Selby.
Terms : 7/6 per day. Car accommodation and car park for the use of members.

TRAVEL FACILITIES.—Bubwith is best reached by private cars as train and bus arrangements are not very convenient.

Trains from Selby, 8-50 a.m., arrive 9-5 a.m. ; 10-46 a.m., arrive 11 a.m.

The railway authorities have kindly arranged for the 10-46 a.m. to stop at Bubwith for our convenience.

Return to Selby : Bubwith, 7-56 p.m. ; Selby, 8-8 p.m.

Bus service from Selby : 9-15 a.m., 11-15 a.m., 1-15 a.m. Returning to Selby : 5-50 p.m., 7-50 p.m., 9-50 p.m.

Bus service from York : 8-57 a.m., 10-25 a.m., 12-27 a.m. Returning to York : 5-45 p.m., 7-45 p.m., 9-45 p.m.

ROUTE.—The party will meet at the White Swan Inn at 11 a.m., and then proceed along the River Derwent bank towards Aughton and

Ellerton, and back by the fields to Bubwith. Leaders: C. F. Procter and T. Stainforth, B.A., B.Sc.

THE DISTRICT.—Bubwith is situated in the part of the Vale of York, known for convenience in Jas. Fraser Robinson's *Flora* as Derwentland, Robinson says, 'the greater part of Derwentland is evidently an aqueous deposit of silt and is peculiarly sandy in character. The average depth of this deposit is somewhere about 50 feet. In agricultural parlance Derwentland is spoken of as "The Levels," this is appropriate and accurately describes this area which is certainly the most evenly low land in East Yorkshire. Agriculturally it is most fertile and hence highly cultivated over most of its area.'

FLORA AND FAUNA.—Dr. W. J. Fordham lived for many years in Bubwith making extensive collections; he has kindly sent the following lists of plants and insects:—

FLOWERING PLANTS.—*Thalictrum flavum*, *Ranunculus peltatus*, *R. sceleratus*, *R. flammula*, *R. arvensis*, *Helleborus foetidus* (Aughton), *Chelidonium majus*, *Barbarea vulgaris*, *Lepidium campestre*, *Reseda lutea*, *Lychnis flos-cuculi*, *L. githago*, *Stellaria palustris*, *S. uliginosa*, *Geranium sylvaticum* (Aughton), *G. pratense*, *Rhamnus catharticus*, *Ononis repens*, *Trifolium procumbens*, *Lathyrus montanus*, *Geum rivale*, *Agrimonia eupatoria*, *Poterium officinale*, *Hippuris vulgaris*, *Callitriche verna*, *Lythrum salicaria*, *Epilobium parviflorum*, *Circaea lutetiana*, *Bryonia dioica*, *Conium maculatum*, *Sium latifolium*, *Aegopodium podagraria*, *Scandix pecten-veneris*, *Oenanthe fistulosa*, *Oe. crocata*, *Oe. phellandrium*, *Silene flavescent*, *Valeriana sambucifolia*, *Pulicaria dysenterica*, *Bidens cernua*, *Artemisia vulgaris*, *Senecio erucifolius*, *Centaurea acyanus*, *Cichorium intybus*, *Lapsana communis*, *Lactuca virosa* (North Duffield), *Tragopogon pratense*, *Lysimachia vulgaris*, *L. nummularia*, *Symphytum officinale*, *Echium vulgare*, *Cuscuta epilinum*, *Linaria vulgaris*, *Pedicularis palustris*, *Utricularia vulgaris*, *Pinguicula vulgaris*, *Lycopus europaeus*, *Stachys palustris*, *S. arvensis*, *Polygonum lapathifolium*, *P. bistorta*, *Viscum album* (Ellerton), *Carpinus betulus*, *Salix triandra*, *S. fragilis*, *Listera ovata*, *Orchis morio*, *O. latifolia*, *Potamogeton lucens*, *Phalaris arundinacea*, *Glyceria fluitans*, *Festuca rubra*, *Asplenium rutamuraria*, *Equisetum limosum*.

HYMENOPTERA.—**ACULEATA.**—*Vespa norvegica*, *Odynerus sinuatus*, *O. 3-fasciatus*, *O. parietinus*, *Clytochrysis chrysostomus*, *Cuphocterus serripes*, *Physoscelis clavipes*, *Andrena nigro-aenea*, *A. helvola*, *A. fulva*, *Nomada goodeniana*, *N. marshamella*, *N. lathburiana*, *N. fabriciana*, *Megachile centuncularis*, *Osmia rufa*, *O. ventralis*, *O. aurulenta*.

TENTHREDINIDÆ.—*Pamphilus inanitus*, *P. silvaticus*, *Sirex gigas*, *S. noctilio*, *Arge cyaneocrocea*, *Priophorus padi*, *P. tristis*, *Cladius pectinicornis*, *Dineura nigricans*, *Pteronidea myosotidis*, *P. testaceus*, *Amauronematus vittatus*, *Calirhoa aethiops*, *Blennocampa pusilla*, *B. tenuicornis*, *Thrinax macula*, *Empria liturata*, *Emphytus rufocinctus*, *E. calceatus*, *Dolerus dubius*, *D. bimaculatus*, *Pachyprotasis variegata*, *Macrophya albicincta*, *Tenthredella velox*, *T. balteata*.

ICHNEUMONIDÆ.—*Cratichneumon lanius*, *Melanichneumon faunus*, *Barichneumon albicinctus*, *Phaeogenes bellicornis*, *P. maculicornis*, *Microcryptus nigrocinctus*, *Glyphicnemis brevis*, *G. suffolciensis*, *Hemiteles*

brunneus, *H. similis*, *Stilpnus gagates*, *Pimpla detrita*, *P. arctica*, *P. oculatoria*, *Polysphincta gracilis*, *Banchus pictus*, *Polyclistus mansuetor*, *Bassus multicolor*, *Homocidus cinctus*, *H. signatus*, *Zootrephus rufiventris*, *Promethus sulcator*, *Mesoleius aulicus*, *M. filicornis*, *Tryphon helophilus*, *Cataglyphus forticornis*, *Polyblastus variitarsus*, *Proclitus socius*, *Omorga faunus*, *Meloboris dorsalis*, *M. stagnalis*, *M. crassicornis*, *Angitia majalis*, *Anilasta clausa*, *Ophion stigmaticus*, *O. obscurus*.

HEMiptera.—*Cymus glandicolor*, *Trapezonotus arenarius*, *Drymus brunneus*, *Piesma capitata*, *Salda littoralis*, *S. cincta*, *S. orthochila*, *Anthocoris gallarum-ulmi*, *Triphleps nigra*, *Pantilius tunicatus*, *Calocoris alpestris*, *C. sexguttatus*, *C. striatus*, *Plesiocoris rugicollis*, *Cyllocoris flavonotatus*, *Lygus viridis*, *Aetorrhinus angulatus*, *Tettigonia viridis*, *Jassus mixtus*, *Alebra albostriella*, *Zygina tiliae*, *Z. parvula*, *Stiroma pteridis*, *Psylla buxi*.

DIPTERA.—*Pales guestphalica*, *Hoplodonta viridula*, *Scellus notatus*, *Poecilobrothus nobilitatus*, *Callimya amoena*, *Pipunculus pratorum*, *P. zonatus*, *Chrysogaster chalybeata*, *Helophilus lineatus*, *Liogaster metallina*, *Ceroxys crassipennis*, *Oxyphora flava*, *Palloptera ambusta*, *Trypeta fluorescentiae*, *Bishopia simplex*, *Tetanocera robusta*, *Parhydra aquila*, *P. 4-punctata*, *Exorista fimbriata*, *Lispa uliginosa*, *Mycetophila cingulum*, *Tendipes rostratus*, *Anopheles maculipennis*, *Simulium equinum*, *Microchrysa cyaneiventris*, *Chrysozona crassicornis*, *Dioctria baumhaueri*, *Clinocera stagnalis*, *Empis nuntia*, *E. scutellata*, *Hilara cingulata*, *Eutarsus aulicus*, *Porphyrops nasuta*, *Phora abdominalis*, *Chilosia pagana*, *Chrysotoxum bicinctum*, *Neoscia floralis*, *Pyrophaena granditarsa*, *Myopa polystigma*, *M. testacea*, *Spilograpta zoe*, *Toxoneura muliebris*, *Elgiva cucularia*, *E. dorsalis*, *Limnia fumigata*, *Neottiophila praeusta*, *Sapromyza tesquae*, *S. 10-punctata*, *Chlorops brevimana*, *Cordylura pubera*, *Voria ruralis*, *Graphomyia maculata*, *Phaonia variegata*.

COLEOPTERA.—*Cychrus rostratus*, *Carabus granulatus*, *Blethisa multipunctata*, *Bembidion doris*, *B. clarki*, *Tachys bistriatus*, *Chlaenius nigricornis*, *Anthraxus consputus*, *Amara fulva*, *Pterostichus macer*, *Grafitodytes lepidus*, *Hydroporus piceus*, *H. tessellatus*, *Dytiscus circumcinctus*, *Orectochilus villosus*, *Helophorus ytenensis*, *Aleochara spadicea*, *Ozypoda longipes*, *Ocyusa maura*, *Atheta terminalis*, *A. malleus*, *A. britteni*, *Tachyusa atra*, *Quedius longicornis*, *Q. brevicornis*, *Q. nigrocoeruleus*, *Q. othinensis*, *Philonthus nigriventris*, *Lathrobium ripicola*, *Blitophaga opaca*, *Hister marginatus*, *Pria dulcamarae*, *Meligethes rubripes*, *Megatoma undata*, *Selatosomus nigricornis*, *Cryptohypnus quadripustulatus*, *Scirtes hemisphericus*, *Malthodes dispar*, *Corynetes coeruleus*, *Anaglyptus mysticus*, *Donacia semicuprea*, *Chrysomela orichalcea*, *Galerucella pusilla*, *Barypithes araneiformis*, *Tanyneucus palliatus*, *Alophus triguttatus*, *Notaris bimaculatus*, *Rhinoncus gramineus*.

MEETING.—Tea, 2/- per head for a meat tea or 1/3 per head for a plain tea, may be had at the White Swan Inn at 5 p.m. This will be followed by a General Meeting at 5-30 p.m., when reports will be given on the work of the various sections.

We shall be glad to have names of intending members so that these can be submitted for election.

The next Meeting of the Union will be at Blubberhouses on July 10th, this is in Vice-County 64.

Yorkshire Naturalists' Union.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

*The Hon. Secretary, Chris. A. Cheetham, Austwick via Lancaster ;
or to The Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.*

This form, when filled up and signed, should be sent to the Hon. Secretary of the Union, accompanied by the amount of the first year's subscription.

The Subscription of 15/- entitles the members to receive the Union's monthly magazine, "The Naturalist," as well as the "Transactions."

Persons related to and resident in the family of a member are admitted as 5/- members, to enable them to attend excursions, but not to receive the publications.

Qualification for Life Membership :—A Donation of 11 Guineas.

.....19.....

.....[Signature and Titles.]

.....

.....[Address.]

*wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe
FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written
resignation is given.*

..... } [Signature of
Proposer
and
Second.]

Elected.....19.....at.....

.....Chairman's Signature.

Yorkshire Naturalists' Union.

President :

W. H. PEARSALL, D.Sc., F.L.S., Leeds.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary :

RILEY FORTUNE, F.Z.S., 8 West Cliffe Terrace, Harrogate.

The 405th Meeting

WILL BE HELD AT

BLUBBERHOUSES

On Saturday, 10th July, 1937

HEADQUARTERS.—Hopper Lane Hotel, Fewston, Harrogate.

TRAVEL FACILITIES.—'Buses leave Harrogate for Blubberhouses 10-30 a.m., 1-45 p.m. (taking 30 minutes). 'Buses leave Skipton for Blubberhouses 9-30 a.m., 12-30 p.m., 2-30 p.m. (taking 40 minutes) ; returning to Harrogate 6 p.m., arriving 6-32 p.m. ; returning to Skipton 4-35 p.m. and 8-35 p.m., arriving 5-15 p.m. and 9-15 p.m.

MAP.—The area is all on Sheet 26, 1 in. Large Sheet Series of the Ordnance Survey.

BOOKS.—An interesting paper, ' Washburndale : Notes on its Physical Features and Natural History,' by W. Eagle Clarke

and W. Denison Roebuck, will be found on pp. 8-20 *The Naturalist*, 1883-4. This contains long lists of Mammalia, Birds and Lepidoptera with shorter ones of Fishes, Mollusca and Coleoptera.

PERMISSION.—Permission to visit the district has been given by the Chairman of the Leeds Waterworks Committee and by Messrs. Stewart, Chalker and Mosby on behalf of Mr. J. E. Charlesworth's Trust.

The following extracts are from a Circular issued for the 1885 meeting at Blubberhouses :—

' **PHYSICAL FEATURES.**—The Washburn (17 miles in length) rises on Craven Moor (1300 ft.) to the N.E. of Simon Seat and flows S.E. through a moorland country until the hamlet of West End is reached, thence through a picturesque and well-wooded valley, the beauty of which is much enhanced by the three extensive and lakelike reservoirs of the Leeds Waterworks system, and joins the Wharfe at Leathley below Otley.'

' **GEOLOGY.**—Mr. J. W. Davis, F.S.A., F.G.S., &c., writes :—The River Washburn drains a tract of country composed entirely of millstone grit rocks. Rising on the elevated moorland of Simon's Fell and Pock Stones Moor, north of Bolton Abbey, its course presents the usual characteristics of occasional escarpments of rock with sloping sides, composed of shale, reaching down to the bed of the river. The lower part of its course runs in the broad valley of the River Wharfe, which it joins a little below Leathley. The most interesting locality in the valley of the Washburn is near Blubberhouses. The great anticlinal, which extends from Skipton to Bolton Bridge, is continued through Blubberhouses in the direction of Harrogate. Evidence of it may be seen west of the village at Kex Gill. The road passes between great escarpments of the Kinderscout Grit, apparently divided, in the first instance by the upheaval caused by the anticlinal, and subsequently extended by subaerial agencies. Lead is obtained from the Yoredale shales beneath the sandstone. A Yoredale limestone is also obtained, and with it a calcareous sandstone, which contains numerous fossil remains of Brachiopods. On the opposite side of the Washburn Valley, at Thruscross, the Kinder Grits pass under those of the Third Grit series.'

' **BOTANY.**—Mr. F. Arnold Lees has furnished us with the following notes :—The flora of the Blubberhouses district presents little that is specially interesting ; upon the moors the same wearisome iteration of Ling, Bilberry, *Erica cinirea* and *tetralix*, *Empetrum*, *Eriophorum vaginatum* and *angustifolium*, *Scirpus cæspitosus*, *Juncus supinus* and *lamprocarpus*, *Aira flexuosa*, and *Nardus stricta*, which species make up ninety-nine hundreds of the individual growths, and which everywhere characterise medium elevations upon the flagstone and rough rock strata of the millstone grit area. No limestones crop up in the district under consideration, to give variety to the vegetation. Blubberhouses, Denton, and Stainburn Moors nowhere overpass 1,340 feet in altitude, ranging, in gentle ling-clad swells, from 700 to 1,200 feet above sea-level (Blubberhouses village itself lying at 500 feet), not rising high enough for the Cloudberry (which stops short in its downward range at 1,600 feet) or other truly montane species to flourish. At this late time of year little will be found on the moors beyond those common plants already mentioned, with here and there in small quantity, Sundew and the Bog Pimpernel among the *Sphagnum acutifolium* and *papillosum*, *Genista anglica* (Petty Whin) in fruit, *Narthecium ossifragum* and *Vaccinium oxycoccus* (the Cranberry) also in fruit. *Vaccinium vitis-idaea* occurs in rocky spots, sparingly, with *Blechnum spicant* ; and such sedges as *Carex pulicaris*, *C. echinata*, *C. flava* var. *minor*, and *C. goodenovii*, vars. *uliginosa* and *juncella* will doubtless be found if specially looked for. In

Redshaw Gill, &c., the Wintergreen (*Trientalis*) has occurred, but will now be long "over." In Lindley Wood *Epipactis eu-latifolia* (growing solitarily in the deeper shade) should yet be in bloom; and about and by the stream from above Leathley to Fewston, *Rosa mollissima* in fruit, *Crepis paludosa*, *Lysimachia nemorum*, *Campanula latifolia*, *Equisetum sylvaticum*, *E. maximum*, and *Nephrodium oreopteris*, are all present. On the shores of one of the reservoirs the Water plantain, *Littorella lacustris*, grows; and in wet sandy spots *Sagina nodosa* and *Radiola millegiana* may both be found, with *Hypericum humifusum*, *Parnassia*, *Scirpus pauciflorus*, *Molinia cærulea*, and a few other semi-common species. The whole district is a rich one in Mosses and Fungi, and bryologists and mycologists will alike reap a much better harvest than the flowering-plant botanist.'

'ENTOMOLOGY.—Lord Walsingham has given some attention to the Lepidoptera, having sent a collector (T. Eedle) there during the past season and on one occasion previously. He has found more than one species somewhat approaching the Shetland types in the range of their variation, notably *Hepialus humuli* and *Melanippe montanata*, but on obtaining a series from intermediate localities, the similarity is not found to be more marked than in the case of specimens taken elsewhere at considerable elevations. Mr. Eedle has been unable to confirm the occurrence of *Gastropacha ilicifolia*, which had been suspected from his previous report. The list of Lepidoptera already on record includes 11 Butterflies, 9 Sphinges and Bombyces, 23 Geometers, 12 Noctuæ, 5 Pyrales, 18 Tortrices, and 9 Tineæ. The present season has added two or three only to this number—which will be mentioned at the meeting. The list of Coleoptera so far includes but 16 names, while of other orders of insects only isolated species are recorded.

'CONCHOLOGY.—The molluscan fauna of Washburndale is not a rich one. The presence of *Zonites excavatus* and *Z. fulvus* indicates the geological characteristic of the district—the predominance of millstone grit rocks—and the absence of limestone is denoted by the deficiency of species of calcareous habitat. The most important capture which has been made is that of the extremely rare slug, *Limax cinereo-niger*, of which they are not a dozen records in all for Britain. *Limax maximus*, *L. lævis*, *L. arborum*, *L. agrestis*, *Arion ater*, *A. subfuscus*, and *hortensis* have also been taken. Of water shells, *Limnæa auricularia* and *L. peregra* are numerous in the reservoirs, and *L. truncatula* and *Ancylus fluviatilis* are to be found. Of land shells the only other species noted are *Zonites cellarius*, *Helix pulchella*, and *H. rotundata*.'

A feature of interest to geologists that is not mentioned in the above reprint is the section of Cayton Gill 'Shell Bed' seen in the north-easterly bank of the Fewston Reservoir a ¼-mile west of the Lodge. This is very fossiliferous, and Dr. Wheelton Hind described some species from this bed in *Proc. Yorks. Geol.*, Vol. XIX, p. 25. This bed may be seen in other places, and possibly the flora, especially the mosses, may help to show where this limestone is at hand.

VERTEBRATE SECTION.—Mr. Riley Fortune writes:—The valley of the Washburn is a very favourite locality for all kinds of wild life. The reservoirs afford sanctuary in the season for many species of wild fowl and waders. The late Wm. Story published many interesting records of the fauna in the pages of *The Naturalist*. Briefly, several species of duck nest in the neighbourhood, Mallard, Teal, Shoveller, etc. The Great Crested and Little Grebes make attempts at nesting each season, generally

with unfortunate results, as the receding waters of the reservoirs leave a succession of stranded nests, and the rooks and crows secure the deserted eggs. I once saw a line of five nests of the Little Grebe which had been abandoned in this way.

Most of the usual small birds will be met with in numbers, but the birds of prey are now rather uncommon. The felling of a lot of mature timber by the Corporation has destroyed most of the likely sites for Woodpeckers.

The usual species of mammals are to be seen, the Badger being the most interesting. Several species of bats occur, but further information is desired about this generally little known family.

Trout are, of course, plentiful, and also the Minnow, Gudgeon, Loach, Bullhead, etc., and Golden Tench have been introduced.

The Adder is plentiful on the Moors, and also the Common Lizard.

MEETING.—Tea at Headquarters at 5 p.m. Plain tea 1/3, with meat 1/9. This will be followed at 5-30 p.m. by a General Meeting to receive reports from the various sections, and we hope to have names of intending members to submit for election.

The next Meeting of the Union will be at Doncaster for Potteric Carr (V.C. 63) on July 31st—August 3rd.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

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Divisional Secretary :

J. GRAINGER, Ph.D., M.Sc., Tolson Museum, Huddersfield.

The 406th Meeting

WILL BE HELD AT

DONCASTER

From Saturday, 31st JULY, 1937
to Monday, 2nd AUGUST, 1937

for the investigation of

BROC-O-DALE, POTTERIC CARRS,
SPROTBOROUGH and LEVITT HAG

HEADQUARTERS.—The Springfield Hotel, Albion Place, Doncaster. Telephone : 2963. Proprietress : Mrs. Sharp. Terms : 7/- per day for bed, breakfast, sandwiches, and dinner. Members willing to share rooms should please say so in making application. A garage for four cars is available at the Hotel. A race-course bus from Station Road, Doncaster, passes the Hotel.

It is not possible to give times for buses to the excursion areas but these will be posted at Headquarters daily. Broc-o-dale and Stapleton Park can be reached from Doncaster by buses to Little Smeaton or to Kirk Smeaton or Wentbridge, all at various times. We leave Headquarters at 10 a.m. each day.

Members are particularly asked to carry Membership Cards and to see that all gates are left closed.

BOOKS AND MAPS.—The Large Sheet Series, one-inch Ordnance Survey, Nos. 31 and 37, cover the area and the Geological Survey Maps are Nos. 32 and 38. Kendall and Wroot's *Geology of Yorkshire* gives a description of the district on page 918, etc. The Y.N.U. Circulars 162 and 267 and *The Naturalist* for 1878, page 174, may be consulted.

PERMISSION for the various excursions has been obtained but it is advisable that members should carry Membership Cards.

BOTANY.—Potteric Carrs have been greatly changed in the last hundred years, first by drainage then by the coming of the railway and finally by opening the district up to colliery workings. Botanists will be interested to see what effect these alterations have had on the bog plants and aquatics of 'The Carrs.' The Water Aloe (*Stratiotes aloides*) was to be found in drains on the north side of the railway line short of two miles from Doncaster Station going towards Rossington, and amongst other plants seen by Y.N.U. members on an excursion in this area in 1879 were : *Thalictrum flavum*, *Barbarea stricta*, *Ranunculus circinatus*, *R. lingua*, *Nuphar lutea*, *Pyrola minor*, *Hottonia palustris*, *Lemna trisulca*, *L. gibba*, *L. polyrrhiza*, *Hydrocharis Morsus-ranæ*.

The excursion to Broc-o-dale on the Permian limestone will provide a different type of flora. Two grasses typical of this Permian soil are *Brachypodium pinnatum* and *B. erectus* and amongst flowering plants are Rock Rose, Lady's Fingers, Dropwort, Spring Potentilla, Squinancywort, Small Scabious, Blue Flea-bane, Ploughman's Spikenard, Greater Centaurea, Clustered Bellflower, Hound's Tongue, Gromwell, Mountain St. John's Wort, Yellow Wort, Great Mullein, Black Horehound, Hemlock, Foetid Hellebore.

MOSESSES.—Dr. S. P. Rowlands writes :—Although the Potteric Carr was famous, before its drainage, for its marshland Phanerogams, it is hardly mentioned in Lees' Flora as a site for interesting Bryophytes but intensive search may reveal some unusual Mosses, *Hypnum cordifolium* and one or two of the Harpidia will be found. The most interesting species will be seen in the old Magnesian limestone quarries at Sprotborough and Wentvale. *Dicranella varia* Schp., *Fissidens pusillus* Wils., *Tortula cernua* Lindb. (at Sprotborough), *T. marginata* Spruce., *Barbula gracilis* Schwaeg., *Weisia tenuis* C.M., *Mnium stellare* Reich., are all to be found. *Orthodontium gracile* Schwaeg. var. *heterocarpa* Wats. occurs in many of the woods of the neighbourhood.

MYCOLOGY.—In the account of the 1916 meeting at Broc-o-dale (*Naturalist*, 1916, p. 329) a good list of fungi then found is given by the late W. N. Cheeseman ; this included eighteen species of Mycetoza.

Dr. Grainger says that *Verpa digitaliformis* has occurred in the surrounding country, and should be looked for assiduously. It is an Ascomycete, belonging to the Helvellaceae, and has an olivaceous-umber pileus about $\frac{3}{4}$ -in. long, borne upon a stem about 3 in. long and $\frac{1}{2}$ -in. in diameter. It occurs under hedges.

LICHENS.—Mr. W. E. L. Wattam writes :—But few records are known for the areas of investigation, but a close examination should yield an interesting lichen flora. Amongst the species which doubtless occur should be *Collema pulposum* Ach., *Parmelia physodes* Ach., *P. saxatilis* Ach., *P. sulcata* Tayl., *P. fuliginosa* Nyl., *Cetraria glauca* Ach., *Evernia prunastri* Ach., *Ev. furfuracea* Mann., *Ramalina fraxinea* Ach., *Lecanora subfusca* Ach., *L. campestris* B. de L., *L. pallida* Schær., *L. muralis* Ach., *L. parella* Ach., *L. cinerea* Sommerf., *L. atra* Ach., *L. galactina* Ach., *L. effusa* Ach., *Xanthoria parietina* Th. Fr., *Placodium flavescens* A. L. Sm., *Physcia hispida* Tuckerm., *Pertusaria pertusa* D. T. & S., *Lecidia confluens* Ach., *Biatorella pruinosa* Mudd., *Bilimbia sabuletorum*, B. & R., *Verrucaria viridula* Ach., *V. nigrescens* Pers., and *V. muralis* Ach.

CONCHOLOGY.—Mrs. Elsie M. Morehouse writes :—Around Broc-o-dale *Helix nemoralis* L. and many of the varieties are to be found, also *Arion ater* L. and several beautiful forms of it. In the limestone quarries *Caecilioides acicula* Müll., *Helicella virgata* da Costa, and *H. caperata*. Montagu are to be found with many of the *Vitreas*. In the Vale of the Went on the limestone outcrops and around them *H. virgata* da Costa occurs and there is an old record of *Vertigo pygmaea* Drap., also *Vitrina pellucida* Müll. near the entrance to the woods. I have not worked the reservoirs and ponds at Thrybergh and Ravensfield, but no doubt they will produce many aquatic species. Potteric Carr has altered greatly ; *Limnaea pereger* Müll. and *Bithynia tentaculata* L. may still be found and probably some of the *Pisidia*.

LEPIDOPTERA.—Mr. George E. Hyde, F.R.E.S., writes :—A good many years ago, the late Doctor H. H. Corbett remarked to the writer of these notes that the Doncaster district was poor in butterflies, but rich in moths. This statement may still be applied, and although the countryside within twelve miles of the town has suffered and changed on account of development, many interesting moths are still found there.

The attached list shows some of the specially interesting species of Macrolepidoptera noted in the area in recent years : *Gonepteryx rhamni*, *Polygonia c-album*, *Vanessa io*, *Coenonympha typhon*, *Thecla w-album*, *Metopsilus porcellus*, *Macroglossa stellatarum*, *Hemaris fuciformis*, *Notodonta tremula*, *N. palpina*, *Orgyia gonostigma*, *Triphaena fimbria*, *Taeniocampa opima*, *Mellinia gilvago*, *Cirrhia citrargo*, *Plusia moneta*, *P. festucae*, *Brephos parthenias*, *Geometra papilionaria*, *Hydriomena ruberata*, *Abraxas sylvata*, *Sesia apiformis*, *Zeuzera pyrina*, *Hepialus velleda*.

ORNITHOLOGY.—Mr. George E. Hyde, F.R.E.S., writes :—The study of Ornithology in the countryside within a radius of twelve miles of Doncaster still holds much that is interesting in spite of the growth of the town and the development of coal in the district. The writer of these notes has taken an interest in local birds for many years, and the attached list shows special features concerning various species met with.

A * indicates those birds which have been found to breed in this district. Peregrine Falcon (seen in 1935), Merlin, Kestrel*, Sparrowhawk*, Buzzard (has been met with in winter), Hen Harrier, Barn Owl*, Long-eared Owl*, Short-eared Owl (nested near Hatfield a few years ago), Tawny Owl*, Little Owl*, Missel Thrush*, Song Thrush*, Redwing, Fieldfare, Blackbird*,

Ring Ouzel, Whinchat*, Stonechat, Wheatear*, Redstart*, Robin*, Night-
ingale*, Whitethroat*, Lesser Whitethroat*, Blackcap*, Garden Warbler*,
Goldcrest*, Grasshopper Warbler*, Reed Warbler*, Sedge Warbler*, Willow
Warbler*, Wood Warbler*, Chiffchaff*, Hedge Sparrow*, Dipper, British
Long-tailed Tit*, Great Tit*, Coal Tit*, Marsh Tit*, Willow Tit*, Blue
Tit*, Nuthatch, Wren*, Tree Creeper*, Pied Wagtail*, Grey Wagtail,
Yellow Wagtail*, Tree Pipit*, Meadow Pipit*, Red-backed Shrike, Spotted
Flycatcher*, Pied Flycatcher, Swallow*, Martin*, Sand Martin*, Green-
finch*, Hawfinch*, Goldfinch*, House Sparrow*, Tree Sparrow*, Chaffinch*,
Brambling, Linnet*, Lesser Redpoll*, Twite, Bullfinch*, Crossbill, Corn
Bunting*, Yellowhammer*, Cirl Bunting, Reed Bunting*, Starling*,
Carrion Crow*, Hooded Crow, Jackdaw*, Rook*, Magpie*, Jay*, Skylark*,
Woodlark, Swift*, Nightjar*, Great Spotted Woodpecker*, Lesser Spotted
Woodpecker, Green Woodpecker*, Kingfisher*, Cuckoo*, Cormorant (one
killed in district a few years ago), Heron*, Bittern, Mute Swan*, Wild Duck*,
Teal*, Tufted Duck*, Shoveller*, Ring Dove*, Stock Dove*, Turtle Dove*,
Pheasant*, Red-legged Partridge*, Partridge*, Black Grouse*, Water Rail,
Corncrake*, Moorhen*, Coot*, Golden Plover, Lapwing*, Woodcock*,
Common Snipe*, Jack Snipe, Ruff, Common Sandpiper, Redshank*, Curlew*,
Herring Gull, Black-headed Gull*, Great Crested Grebe*, Little Grebe*,

Mr. Hyde's papers with fuller notes on the Lepidoptera and Birds will
be available at Headquarters.

MEETINGS.—Tea will be had at Headquarters on Monday at 5 p.m.
and will be followed by a **General Meeting** to receive reports from the
various sections and also for the election of new members. We hope to have
some nominations in time for this meeting.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

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The 408th Meeting and 76th Annual Meeting

WILL BE HELD AT

WAKEFIELD

On Saturday, December 4th, 1937

The Annual Meeting of the Union will be held at Wakefield by invitation of the Wakefield Naturalist Society. The meetings will be held in the Institute of Literature and Science, Wood Street, Wakefield, through the courtesy of the Wakefield Corporation.

The Wakefield Naturalist Society invite members of the Y.N.U. to a *Conversazione* at the City Museum, Holmfield Park, after the meetings. Refreshments will be provided. During the past summer the Wakefield Naturalist Society have been attempting a regional survey and an exhibition of collected data and material has been arranged at the museum.

TRAVEL FACILITIES.—Wakefield is well provided with rail and bus connections from all parts of the county and time-tables will be placed in the Library at the Institute for use by members.

PROGRAMME

2-0 p.m. **Sectional and Committee Meetings** in the large hall at the Institute of Literature and Science, Wood Street.

2-30 p.m. **Executive Meeting.**

3-0 p.m. **General Committee Meeting.**

4-0 p.m. (Approx.) **Tea Interval.**

The following cafés are suggested as being within easy access of the Institute :

Webster's Café, Cross Square ;
Kiosk Café, Bull Ring ;
Chocodero, Little Westgate.

5-45 p.m. **Reassemble** in the Library at the Institute for a welcome by the Mayor of Wakefield, Alderman T. Crowe.

6-0 p.m. **Annual Meeting and Presidential Address** on " Soil Types and (Plant) Ecology in Yorkshire."

7-0 p.m. **Buses** will be waiting to take members to the City Museum for the *Conversazione* and Exhibition of local material and data collected by members of the Wakefield Naturalist Society.

Will members of the **Executive** and of the **General Committee** take note of the above times as no further notice of these meetings will be sent out.

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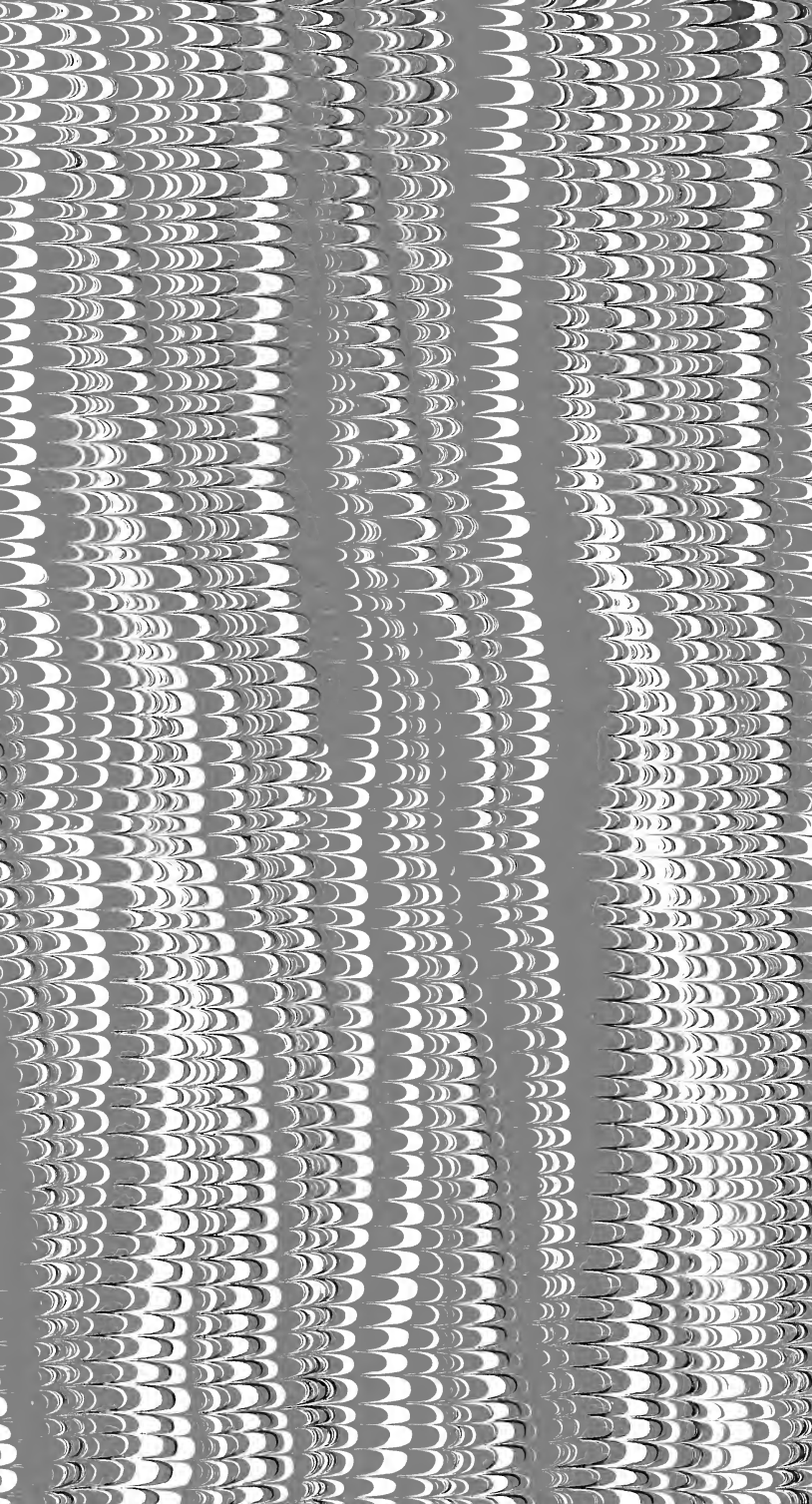
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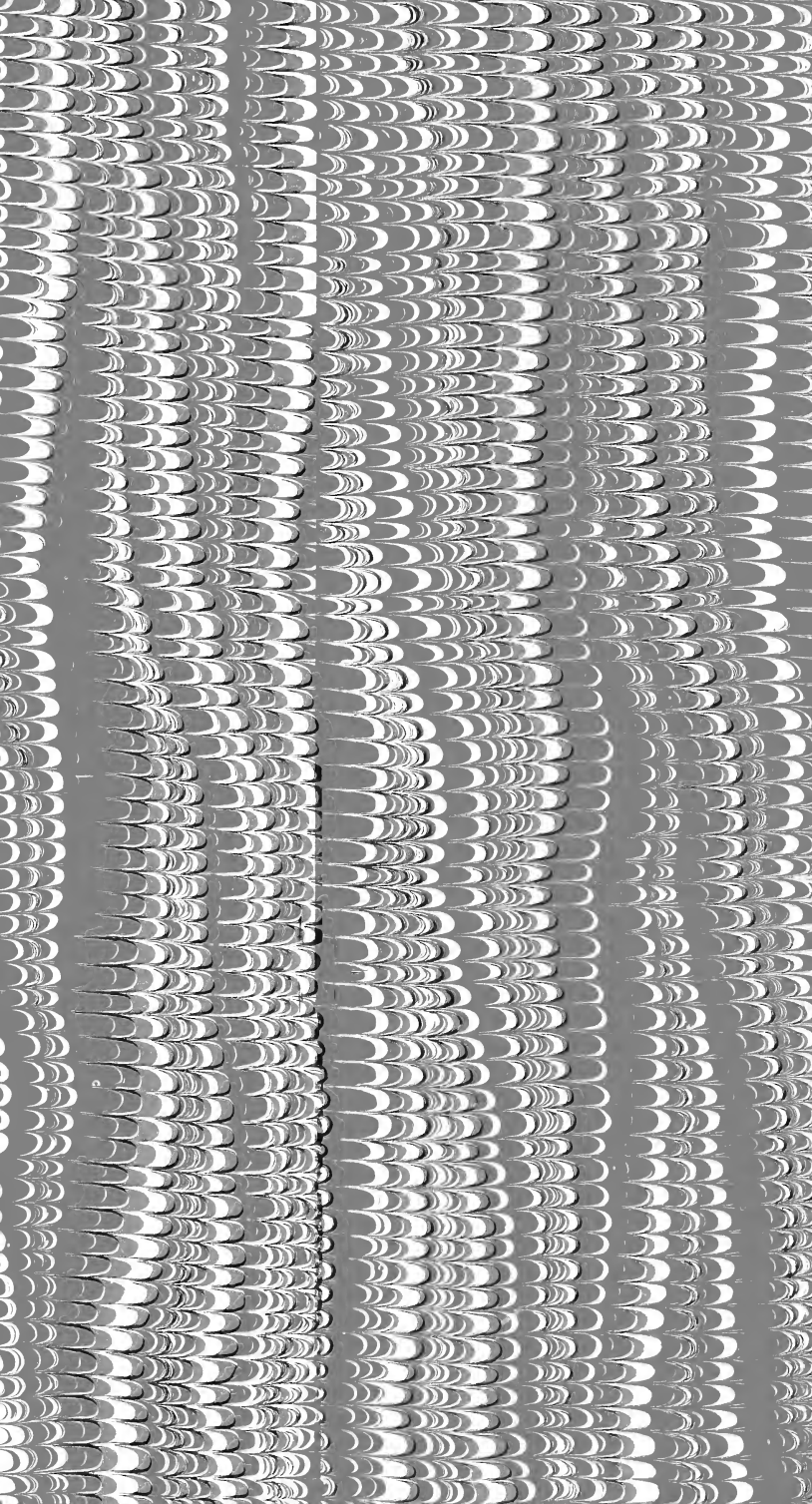
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